Arizona Department of Transportation
Intermodal Transportation Division
Environmental Planning Group
205 South 17th Avenue
Phoenix, Arizona 85007

Draft Environmental Assessment

for

GRAND AVENUE (US 60) 43RD AVENUE/ CAMELBACK ROAD

Maricopa County, Arizona
TRACS Project No. 060 MA 160 H5532 01C
Federal Project No. STP-060-B()
ADOT Project No. RAM 060-B-500

Approved by: _____ On: 5/23/01
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This environmental assessment has been prepared in accordance with provisions and requirements of Chapter 1, Title 23 USC, 23 CFR Part 771, relating to the implementation of the National Environmental Policy Act of 1969.

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LIST OF ACRONYMS

AASHTO	**American Association of State Highway and Transportation Officials**
ACIDS	**Arizona CERCLA information and data system**
ADOT	**Arizona Department of Transportation**
ADES	**Arizona Department of Economic Security**
ADEQ	**Arizona Department of Environmental Quality**
AGFD	**Arizona Game & Fish Department**
AIRFA	**American Indian Religious Freedom Act**
ARPA	**Archaeological Resources Protection Act**
ASC	**Alternative Selection Committee**
BLM	**Bureau of Land Management**
BNSF	**Burlington Northern Santa Fe Railway**
CAAA	**Clean Air Act Amendments**
CERCLA	**Comprehensive Environmental Response, Compensation, and Liability Act**
CFR	**Code of Federal Regulations**
CO	**Carbon Monoxide**
COE	**U.S. Army Corps of Engineers**
EA	**Environmental Assessment**
EPA	**Environmental Protection Agency**
FEMA	**Federal Emergency Management Agency**
FHWA	**Federal Highway Administration**
FIP	**Federal Implementation Plan**
FIRM	**Flood Insurance Rate Maps**
ISA	**Initial Site Assessment**
DCR	**Design Concept Report**
LOS	**Level of Service**
LUST	**Leaking Underground Storage Tank**
MAG	**Maricopa County Association of Governments**
NAAQS	**National Ambient Air Quality Standards**
NAC	**Noise Activity Category**
NAFTA	**North American Free Trade Agreement**
NEPA	**National Environmental Policy Act**
NPDES	**National Pollutant Discharge Elimination System**
NHPA	**National Historic Preservation Act**
NRHP	**National Register of Historic Places**
NOI	**Notice of Intent**
NOT	**Notice of Termination**
PISA	**Preliminary Initial Site Assessment**
PLO	**Public Land Order**
RCRA	**Resource Conservation and Recovery Act**
RPTA	**Regional Public Transit Authority**
SARA	**Superfund Amendments and Reauthorization Act**
SHPO	**State Historic Preservation Office**
SIP	**State Implementation Plan**
SR	**State Route**
SRP	**Salt River Project**
SWPPP	**Stormwater Pollution Prevention Plan**
USFWS	**U.S. Fish & Wildlife Service**
UST	**Underground Storage Tanks**
WQARF	**Water Quality Assurance Revolving Fund**

MITIGATION MEASURES

The following mitigation measures and commitments are not subject to change or modification without the prior written approval of the Federal Highway Administration.

Arizona Department of Transportation (ADOT) Environmental Planning Group Responsibilities:

1. ADOT would complete a full Phase I Site Assessment prior to right-of-way acquisition of any sites identified in the Preliminary Initial Site Assessment that would require further evaluation. (Refer to page 46.)

ADOT Design Responsibilities:

1. ADOT would coordinate with RPTA to replace or relocate bus stop locations if necessary. (Refer to page 23.)

2. ADOT would coordinate and review the City of Phoenix's proposed aesthetic treatments during final project design. (Refer to page 42).

ADOT Roadside Development Responsibilities:

1. All embankment slopes and detention basins would be landscaped with low-water use plants and the area covered with decomposed or crushed granite. An irrigation system would be needed to establish and maintain the plants. Trees would be planted along detention basins to screen the facilities from the view of motorists. The remaining paved portion of Grand Avenue that will not be used for traffic movement would be removed and landscaped. (Refer to page 41.)

2. The ADOT Roadside Development Section would determine who would prepare the Storm Water Pollution Prevention Plan. (Refer to page 45.)

ADOT District Construction Responsibilities:

1. The District Construction Office would notify the Alhambra and Phoenix Union School Districts at least14 days prior to any ground disturbing activities to discuss alternate routes if necessary. (Refer to page 22.)

2. Because 5 or more acres of land would be disturbed, a National Pollutant Discharge Elimination System permit would be required. The District Construction Office would submit the Notice of Intent

and the Notice of Termination to the U.S. Environmental Protection Agency and copies to the Arizona Department of Environmental Quality. (Refer to page 45.)

Contractor's Responsibilities:

1. Traffic and access during construction would be maintained on 43rd Avenue, Camelback Road and Grand Avenue, and to adjoining businesses. Road closures would occur on selected nights or weekends and would be coordinated with the ADOT Engineer and the City of Phoenix's Construction Traffic Control Section. (Refer to page 16.)

2. The contractor would provide notice to utility customers at least 14 days prior to any disruption of service involving the removal or relocation of utilities, if applicable. (Refer to page 17.)

3. The contractor would notify adjacent property owners and tenants at least 14 days prior to the start of construction. (Refer to page 17.)

4. The contractor would adhere to Maricopa County Rule 310 and 360 regarding fugitive dust emissions and new source performance standards, respectively, during construction. (Refer to page 23.)

5. The contractor would be responsible for obtaining any necessary asbestos permits for demolition of any structures, if applicable. (Refer to page 36.)

6. In order to prevent the introduction of invasive species, all earth-moving and hauling equipment would be washed prior to entering the construction site. (Refer to page 41.)

7. Because 5 or more acres of land would be disturbed, a National Pollutant Discharge Elimination System (NPDES) permit would be required. The contractor would submit the Notice of Intent and the Notice of Termination to the U.S. Environmental Protection Agency and copies to the Arizona Department of Environmental Quality. (Refer to page 45.)

Standard Specifications Included as Mitigation Measures:

1. According to *Arizona Department of Transportation Standard Specifications for Road and Bridge Construction, Section 107.06 Archaeological Features* (2000 Edition), if previously unidentified cultural resources are discovered during construction, the contractor would stop work immediately at the location, take all reasonable steps to secure the preservation of those features, and notify the ADOT Engineer. ADOT would, in turn, notify the appropriate agency(ies) to evaluate the significance of the resource. (Refer to page 33.)

2. During construction, care would be taken to ensure that construction materials are handled in accordance with *Arizona Department of Transportation Standard Specifications for Road and Bridge Construction* Section 104.09 (2000 edition) and the Water Quality Standards in Title 18, Chapter 11 of the Arizona Administrative Code as administered by the Arizona Department of Environmental Quality. (Refer to page 45.)

3. Excess waste material and construction debris would be disposed of at sites supplied by the contractor. Disposal would be made at either Municipal Landfills approved under Title D of the Resource Conservation and Recovery Act (RCRA), Construction Debris Landfills approved under Article 3 of the Arizona Revised Statutes (ARS) 49-241 (Aqua Protection Permit) administered by ADEQ, or Inert Landfills. (Refer to page 46 .)

4. Any material sources required for this project outside of the project area would be examined for environmental effects, by the contractor, prior to use, through a separate environmental analysis. (Refer to page 46.)

5. According to *Arizona Department of Transportation's Standard Specifications for Road and Bridge Construction, Section 107 Legal Relations and Responsibility to Public* (2000 Edition) (Stored Specification 107HAZMT, 01/15/93), if previously unidentified or suspect hazardous materials are encountered during construction, work would stop at that location and the ADOT Engineer would be contacted to arrange for proper treatment of those materials. Such locations would be investigated and proper action implemented prior to the continuation of work in that location. (Refer to page 47.)

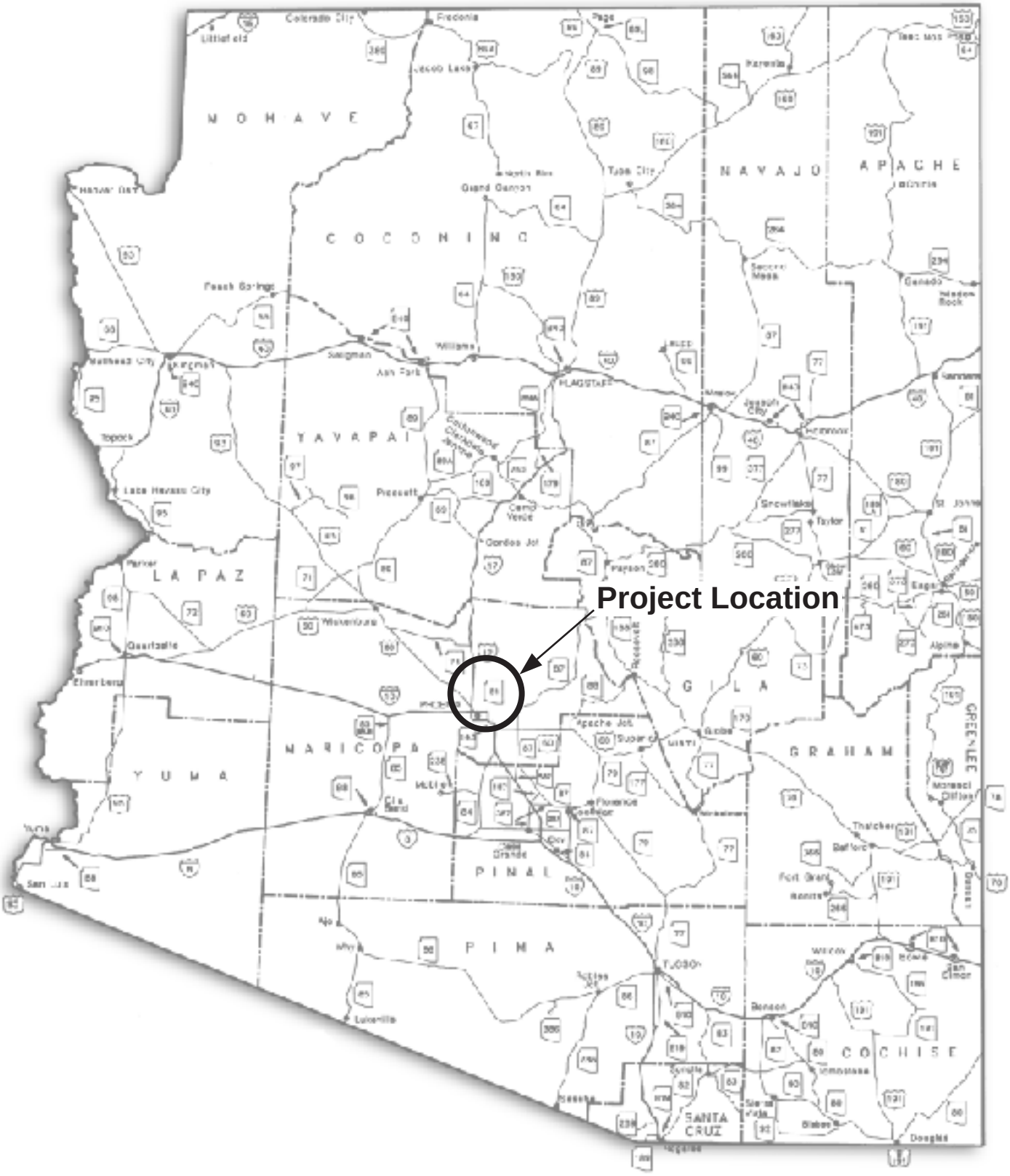


Figure 1. State Location Map

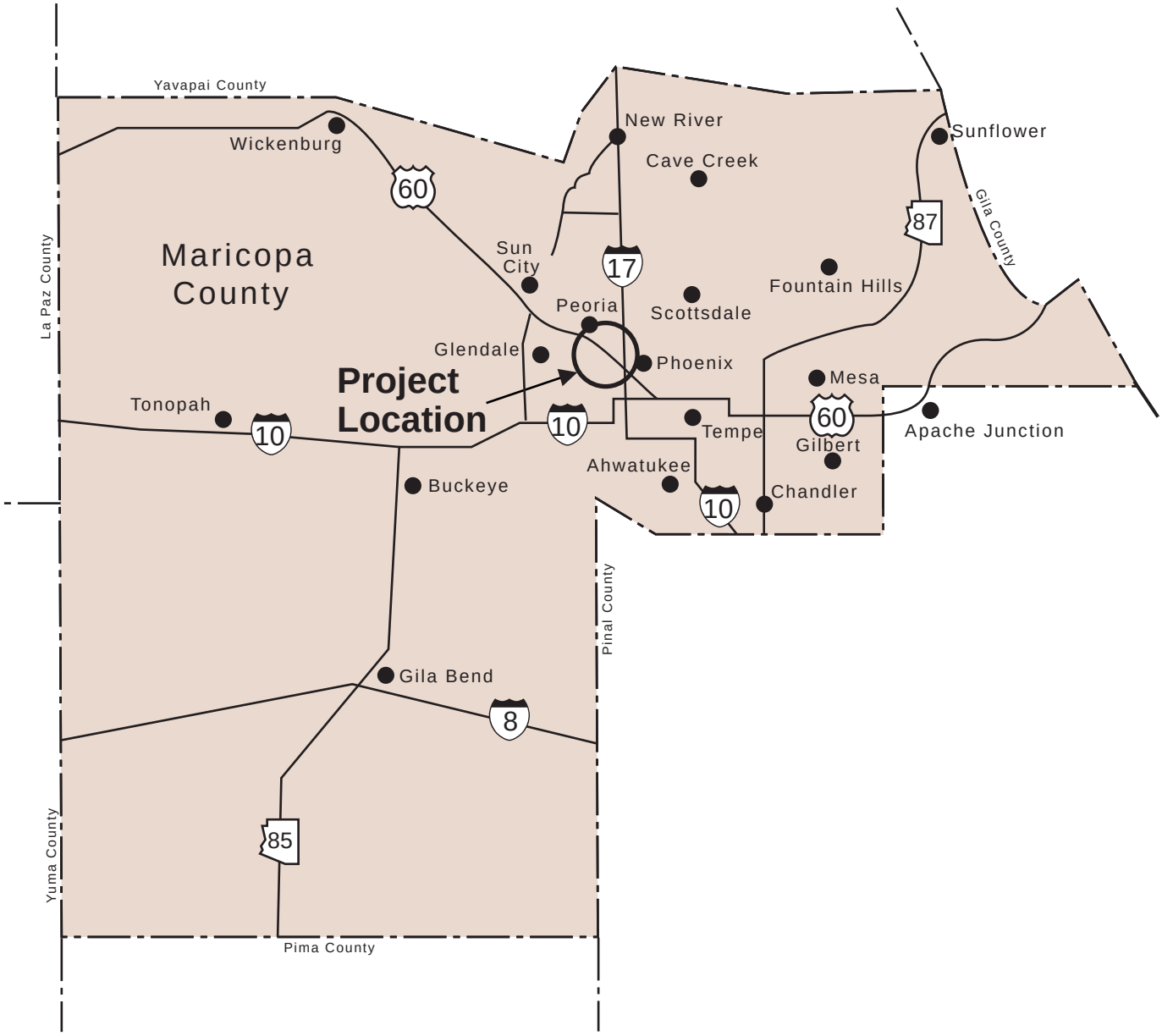


Figure 2. Maricopa County Location Map

Figure 3. Project Location Map

I. PROJECT PURPOSE AND NEED

A. Project Background and Overview

The Arizona Department of Transportation (ADOT), in conjunction with the Federal Highway Administration (FHWA), has identified the need to improve the operation of Grand Avenue at 43rd Avenue and Camelback Road in the cities of Phoenix and Glendale, Maricopa County, Arizona (refer to Figures 1 & 2). ADOT proposes to construct a grade-separation structure that would re-align Grand Avenue over both 43rd Avenue and Camelback Road. The project would eliminate the current six-legged intersection, reduce traffic delays, and improve the level of service (LOS) during peak traffic periods.

Scoping and information meetings were held with the public, a stakeholder group, and with Federal, State, and local agencies. Based on the issues and concerns stated during these meetings, and the nature of the proposed improvements, the FHWA, as the lead Federal agency, has indicated that an Environmental Assessment (EA) appears to be the appropriate level of environmental documentation necessary to analyze the magnitude of impacts based on their context and intensity, as are defined in the Council on Environmental Quality (CEQ) Regulations. This EA describes the probable social, economic and environmental impacts of the proposed action based on field surveys, and reviews of agency planning documents and technical reports so that the magnitude of the impacts can be determined. This document is intended to be a companion document with the Design Concept Report (DCR), which describes in detail the preliminary design features of the proposed build alternative.

Within the Phoenix Metropolitan Area this portion of US 60 is designated as Grand Avenue. Typically, arterial streets within the metropolitan area intersect from north-south and east-west directions, which result in a standard four-legged intersection. Grand Avenue aligns on a northwest to southeast direction. This northwest to southeast alignment of Grand Avenue creates six-legged intersections as it intersects main north-south and east-west arterial streets **(refer to Figure 3)**. Grand Avenue was originally built to link agricultural lands and their growing communities, to downtown Phoenix and the state capitol building. Grand Avenue has undergone a series of studies over the past two decades to identify and examine a range of alternatives to improve the current and future traffic conditions.

In 1985, the Maricopa Association of Governments (MAG) completed the *West Area Transportation Analyses*. This report analyzed the option to build a freeway along the corridor and/or build grade-separation structure(s), which would remove one of the roads at each six-legged intersection. In 1990, the Interstate 10 (I-10) to Interstate 17 (I-17) traffic interchange connection was completed. This connection reduced some of the through travel on Grand Avenue, but did not resolve all of the traffic operation problems.

ADOT and MAG followed with the *Grand Avenue Corridor Study,* in 1996 which developed expressway concepts that were distinguished by design speeds and traffic service. The Grand Avenue Expressway concept was eliminated by the Governor of Arizona and MAG's Regional Council, in order to bring program costs in line with expected revenues.

In January 1999, ADOT initiated the *Grand Avenue Major Investment Study* (MIS). This study evaluated and recommended transportation improvements for the entire Grand Avenue corridor, and identified potential environmental impacts. A steering committee comprised of ADOT, Cities of Glendale, Peoria, and Phoenix, MAG, Maricopa County, Regional Public Transportation Authority (RPTA), WESTMARC (a private association for businesses and development in the West Valley), and Burlington Northern Sante Fe Railway (BNSF), was formed to identify improvement options to the Grand Avenue corridor. In addition, two public meetings and a stakeholders meeting were held to provide opportunities for the public to solicit information and comment. The eight project objectives of that study included the following:

- Eliminate six-legged intersections.
- Eliminate railroad crossings.
- Improve regional mobility.
- Promote development opportunities.
- Improve aesthetics of the corridor.
- Serve the statewide function of US 60.
- Promote multi-modal uses in the corridor.
- Accommodate the projected travel demand in the corridor.

Two options from the 1996 *Grand Avenue Corridor Study* were refined and evaluated in the MIS. These two alternatives were created in a cooperative effort, which included that studies public involvement effort. The alternatives included both an Alternating Grade Separations and a Limited Expressway concept. Each alternative addressed the eight project objectives, but the Alternating Grade Separations option, would more effectively address railroad crossings, and would be less expensive than completing the Limited Expressway concept.

ADOT's objectives for this project are to improve the traffic operation at the intersection of Grand Avenue, 43rd Avenue, and Camelback Road while minimizing environmental impacts, right-of-way acquisition, reducing construction costs, and limiting traffic restrictions during construction. The proposed improvements should comply with current ADOT and American Association of State Highway and Transportation Officials (AASHTO) design criteria/guidelines and accommodate future traffic volumes predicted for the year 2025. The facility should also provide a LOS of D or better, in the design year of

2025. LOS is a qualitative measure referring to the degree of congestion or delay experienced by motorists. LOS range from A to F, with A being the best quality of traffic flow, and F being the poorest (refer to Figure 4 and Table 1).

The recommended alternative for Grand Avenue at 43rd Avenue and Camelback Road, as depicted in the MIS, is a grade-separation structure, meaning Grand Avenue would be elevated and pass over both 43rd Avenue and Camelback Road. Grand Avenue would align to the northeast of the existing roadway in order to reduce length of bridge structure. It would also allow the project to be built while maintaining traffic on adjacent surface streets, and detouring to collector streets if necessary.

Table 1. Level of Service Criteria for Signalized Intersections

Level of Service	Average Control Delay per Vehicle (seconds/vehicle)
A	0 to 10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	>80.0

Source: ADOT 2000.

B. Project Need

Grand Avenue and the adjacent BNSF railway provide a transportation corridor serving the industrial and commercial businesses in the western Phoenix metropolitan area. Grand Avenue also provides through traffic mobility and local access to commercial, retail and industrial businesses, and residential areas along the corridor.

The existing six-legged intersection creates long traffic delays of approximately 4 minutes in the morning commute and 5 minutes during the afternoon commute. This delay causes a LOS F (refer to Table 1 and Figure 4) during both peak periods. This is the lowest LOS level as indicated in Table 1.

Grand Avenue currently has traffic volumes ranging between 26,000 and 29,500 vehicles per day (vpd) (refer to Table 2). In 2025, Grand Avenue is forecasted to carry between 31,000 and 37,600 vpd, which is a net increase of approximately 7,000 vpd. Without operational improvements, the intersection is

Level of Service A.

Level of Service D.

Level of Service B.

Level of Service E.

Level of Service C.

Level of Service F.

Figure 4. Level of Service Classifications

expected to continue to operate at LOS F. A grade-separation for eliminating the six-legged intersection would improve the operation and reduce congestion, and therefore improve the capacity of the intersection. Table 2 illustrates 1999 and forecasted 2025 traffic volumes and LOS classifications if no improvements (No Action) to the intersection were made. Traffic volumes are represented by a range of Average Daily Traffic (ADT) in vpd. This range illustrates that volumes may differ on either side of the six-legged intersection because of turning movements onto the other main arterial streets, and the fact that not all vehicles will necessarily travel straight through the intersection.

Table 2. Existing 1999 and Forecast "No Action" 2025 Traffic Volumes and LOS Classifications

Location	1999 (Existing)			2025 (No Action)		
	ADT (vpd)[1]	LOS		ADT (vpd)	LOS	
		AM	PM		AM	PM
Grand Avenue	26,000 - 29,500	F	F	31,000 - 37,600	F	F
Camelback Road	26,200 - 30,900	F	F	34,700 - 35,800	F	F
43rd Avenue	32,700 - 37,900	F	F	35,000 - 39,500	F	F

Source: ADOT 2000. *Grand Avenue (US 60) at 43rd Avenue and Camelback Road Traffic Analysis Report*. *ADT (vpd) - Average Daily Traffic (vehicles per day)*

C. Issues Eliminated from Detailed Study

There are no known sole source aquifers, riparian habitats, wetlands, prime or unique farmlands, National Natural Landmarks, or wild and scenic rivers within the project area; therefore, there would be no impacts to these resources. This negative declaration of impacts will not be restated in this document.

II. ALTERNATIVES CONSIDERED

This section describes the alternatives considered for the proposed improvements to Grand Avenue in the DCR. Build alternatives and a No Action Alternative were evaluated based on public and stakeholder input, right-of-way requirements, costs, and feasibility of design concept. The Alternative Selection Committee (ASC) included representatives from ADOT Valley Project Management, ADOT Phoenix Construction District, ADOT Right-of-Way Section, ADOT Roadway Section, ADOT Environmental Planning Group, FHWA, and the Cities of Glendale and Phoenix.

A. No Action Alternative

Alternative 1: No Action (eliminated)

The No Action Alternative (Alternative 1) would allow for minor improvements and routine maintenance. This alternative proposes no major improvements. The intersection would remain as a six-legged intersection and would not decrease delay times or improve traffic movements through the intersection in the design year 2025, when compared with build alternatives. The No Action Alternative does not meet the operational needs of the project, but is the baseline condition used for comparison against the build alternatives in order to determine, evaluate, and compare the magnitude of potential impacts.

B. Build Alternatives Considered

Four build alternatives (Alternatives 2-5) were developed for the proposed Grand Avenue overpass. These alternatives illustrate that Grand Avenue would be constructed as a grade-separation, meaning Grand Avenue would be elevated and pass over both 43rd Avenue and Camelback Road. In addition, each build alternative would include four directional ramps, which would provide northwest bound on- and off-ramp access, and southeast bound on- and off-ramp access.

These alternatives were based on the design criteria established for the project including cost, LOS, right-of-way, railroad crossings, and drainage. The alternatives evaluation was used to assist the ASC in the final selection of the preferred alternative for the 43rd Avenue and Camelback Road project location. For the purposes of this EA, the alternatives are described and contrasted by total project cost, right-of-way, and LOS (refer toTable 3). These criteria were weighted factors used by the ASC during their final selection of the preferred alternative. Additional criteria such as construction constraints, potential environmental concerns, and utilities were also analyzed; however, in general there were no substantial

differences among the build alternatives. For more details of each alternative, refer to the Design Concept Report (ADOT 2000).

Table 3. Comparison of Alternatives

Evaluation Criteria		Alternatives				
		Alt. 1 (No Action)	**Alt. 2 (eliminated)**	**Alt. 3 (eliminated)**	**Alt. 4 (eliminated)**	**Alt. 5 (preferred)**
Total Project Cost (millions)		0	$25.7	$29.0	$28.8	$28.7
Right-of- Way	Additional Parcels Taken	None	Cardenal Car Stereo Gary's Furniture Used Car Mega Store	Home Depot Cardenal Car Stereo Carefree Car Wholesaler Used Car Mega Store	Home Depot Used Car Mega Store	Base Case (Table 3)
	Parcels Not Taken	N/A	N/A	Michigan Trailer Sales Residences Five Lots	Michigan Trailer Sales Residences Five Lots	Cardenal Car Stereo Gary's Furniture Used Car Mega Store
Level of Service	AM Peak Hour	LOS F - 255 sec/veh	LOS D - 35 sec/veh	LOS D - 38 sec/veh	LOS D - 35 sec/veh	LOS D - 35 sec/veh
	PM Peak Hour	LOS F - 282 sec/veh	LOS D - 50 sec/veh	LOS D - 47 sec/veh	LOS D - 50 sec/veh	LOS D - 50 sec/veh

Source: ADOT 2000

Alternative 2: Northwest-Bound At-Grade Off-Ramp (eliminated)

Alternative 2 would include four ramps (refer to Figure 5). Motorists seeking the southeast-bound off-ramp from Grand Avenue, and the northwest-bound on-ramp to Grand Avenue would exit and/or enter, respectively, from 43rd Avenue just north of the 43rd Avenue and Camelback Road intersection. The southeast-bound on-ramp would begin at the remaining 43rd Avenue and Camelback Road intersection. In addition, the northwest-bound off-ramp would intersect Camelback Road near 41st Drive, where a new traffic signal would be located.

Alternative 2 would cost approximately $25.7 million. The ramps would be designed for a speed limit of 45 miles per hour (mph). New signals on Camelback Road and 43rd Avenue would operate at LOS B. The delay at the 43rd Avenue and Camelback intersection would be 35 seconds per vehicle (sec/veh) during the morning peak commute and 50 sec/veh during the afternoon peak.

Alternative 2 was eliminated from consideration by the ASC because the location of the traffic signals for the two ramp terminals at 43rd Avenue (approximately 500 feet north of Camelback Road) would likely

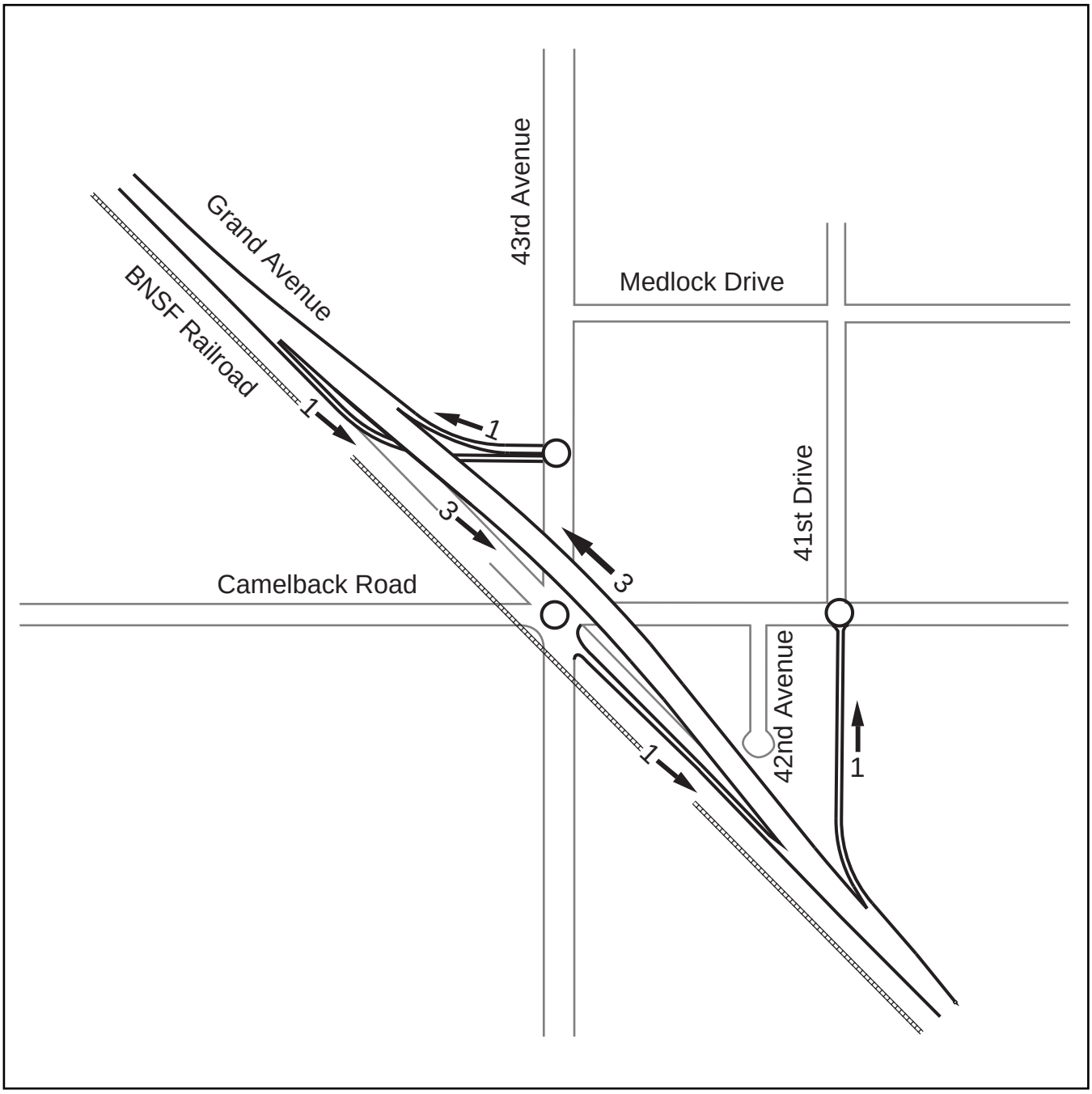


Figure 5. Alternative 2 (eliminated)

create additional traffic delays for motorists traveling on 43rd Avenue, and potentially cause additional congestion at the remaining 43rd Avenue and Camelback intersection. In addition, Alternative 2 would also potentially increase neighborhood cut-through traffic on Medlock Drive, and would eliminate access to 41st Drive from Camelback Road.

Alternative 3: Northwest-Bound Flyover Off-Ramp (eliminated)

Alternative 3 is essentially the same design concept as Alternative 2, except for the location of the northwest-bound off-ramp (refer to Figure 6). The alignment of this ramp would be constructed as a flyover that crosses over Camelback Road and returns to grade as it intersects 43rd Avenue directly across from the northwest-bound on-ramp and southeast-bound off-ramp. A traffic signal would be constructed at this intersection. Alternative 2 would cost approximately $29.0 million to construct. Traffic delay times at the 43rd Avenue and Camelback intersection would be 38 sec/veh during the morning commute and 47 sec/veh during the afternoon peak.

Alternative 3 was eliminated from consideration by the ASC because of the additional project costs associated with right-of-way, which would be primarily associated with the acquisition of the Home Depot property, which is similar to the right-of-way requirements for Alternative 4. In addition, the locations of the ramp termini for three of the four ramps would intersect 43rd Avenue south of Medlock Drive and north of the 43rd Avenue and Camelback Road intersection. This could potentially create traffic delays and/or congestion along 43rd Avenue and at the remaining 43rd Avenue and Camelback Road intersection. The additional traffic associated with the third ramp when compared to only 2 ramps, as illustrated in Alternatives 2, 4 and 5 could create enough delay to reduce LOS along 43rd Avenue and the remaining 43rd Avenue and Camelback Road intersection.

Alternative 4: Northwest-Bound Loop Off-Ramp (eliminated)

Alternative 4 is also similar in concept to both Alternative 2 and Alternative 3 with the exception of the location of the northwest-bound off-ramp (refer to Figure 7). The northwest-bound off-ramp would be designed as a flyover ramp that crosses Camelback Road and curves back to grade west of 42nd Avenue, where a new signal would be located. Alternative 4 would cost approximately $28.8million. The delay times at the Camelback Road and 43rd Avenue intersection would be 35 sec/veh during the morning commute and 50 sec/veh during the afternoon peak.

Alternative 4 was eliminated from consideration by the ASC because of the additional cost of right-of-way, which similar to Alternative 3 is attributed to the costs of acquiring the Home Depot property. In addition, one new traffic light would be required on Camelback Road when compared to Alternative 3. The proximity

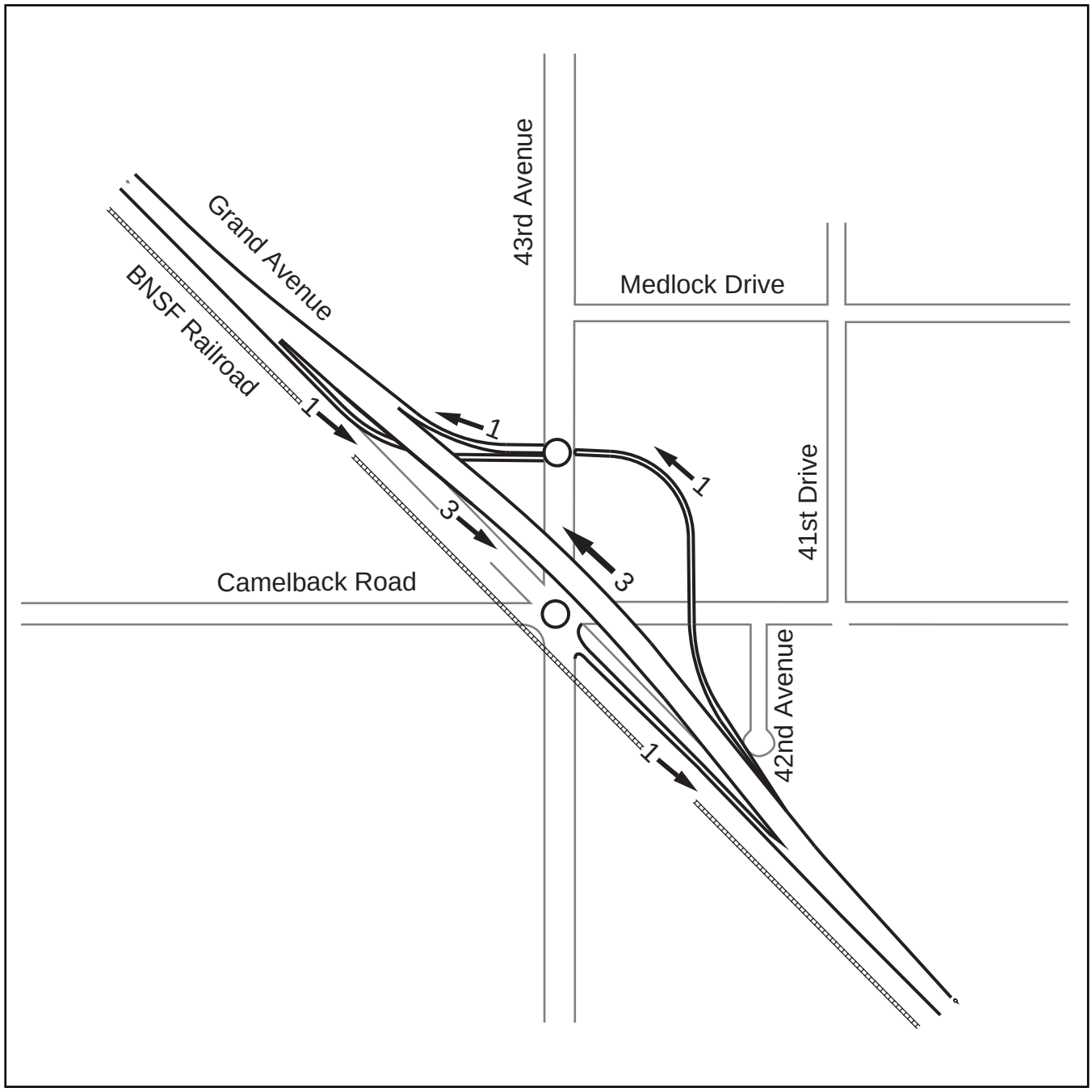


Figure 6. Alternative 3 (eliminated)

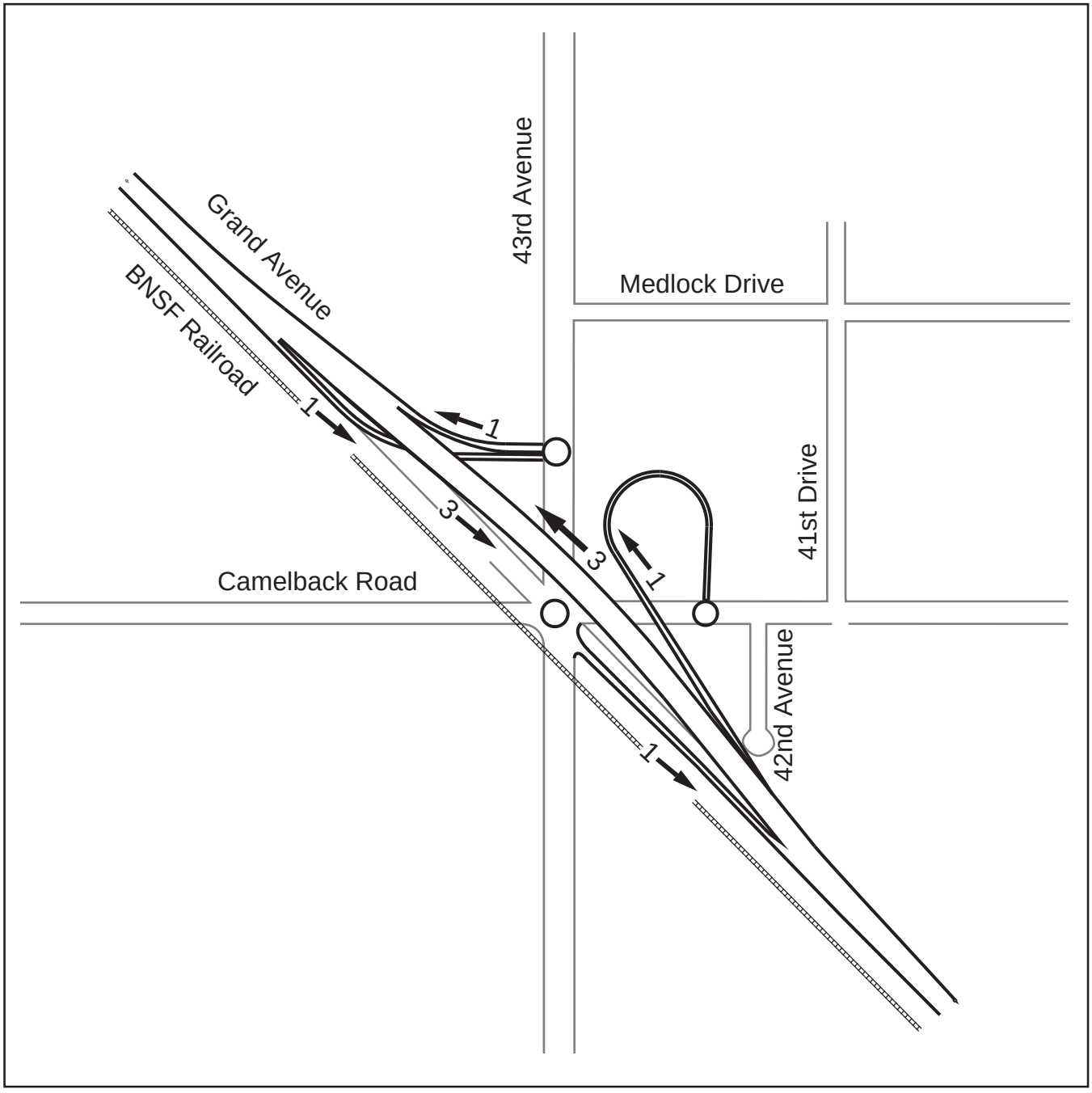


Figure 7. Alternative 4 (eliminated)

of these lights and their interrelated timing would be difficult to facilitate. This could lead to additional operational problems and not be consistent with the project goals.

Alternative 5: Grand Avenue Overpass (preferred alternative)

The ASC and the general public (through comments received at the public information meetings and written comments) recommended modifications to the other build alternatives that developed Alternative 5 (refer to Figure 8). Concern was expressed regarding the signal location for the ramp terminals at 43rd Avenue (approximately 500 feet north of Camelback Road). The northwest-bound on-ramp and southeast-bound off-ramp intersections with 43rd Avenue would be moved northward an additional 400 feet when compared to Alternative 2, to increase the overall distance to Camelback Road. The southeast-bound off-ramp would pass under the Grand Avenue Overpass structure and connect to 43rd Avenue along side the northwest-bound on-ramp entrance. The northwest-bound off-ramp would intersect Camelback Road just west of 41st Drive, where a traffic signal would be included. The southeast-bound on-ramp would be located at the remaining Camelback Road and 43rd Avenue intersection. Aligning the northwest-bound off-ramp at this location would reduce the potential for cut-through traffic into the residential area north of Camelback Road. The delay times associated with the remaining 43rd Avenue and Camelback Road intersection would be similar to other build alternatives, as well as the total project costs. The delay times would be 35 sec/veh during the morning commute and 50 sec/veh during the afternoon peak. Alternative 5 would cost approximately $28.7 million to build.

Alternative 5 was identified as the preferred alternative because it would reduce potential neighborhood traffic conflicts by locating the northwest-bound off-ramp termini with Camelback Road to the west of 41st Drive. The proposed improvements would also require less right-of-way when compared to Alternatives 3 and 4. In addition, the location of the northwest-bound off-ramp would be located further to the east when compared to Alternative 4.

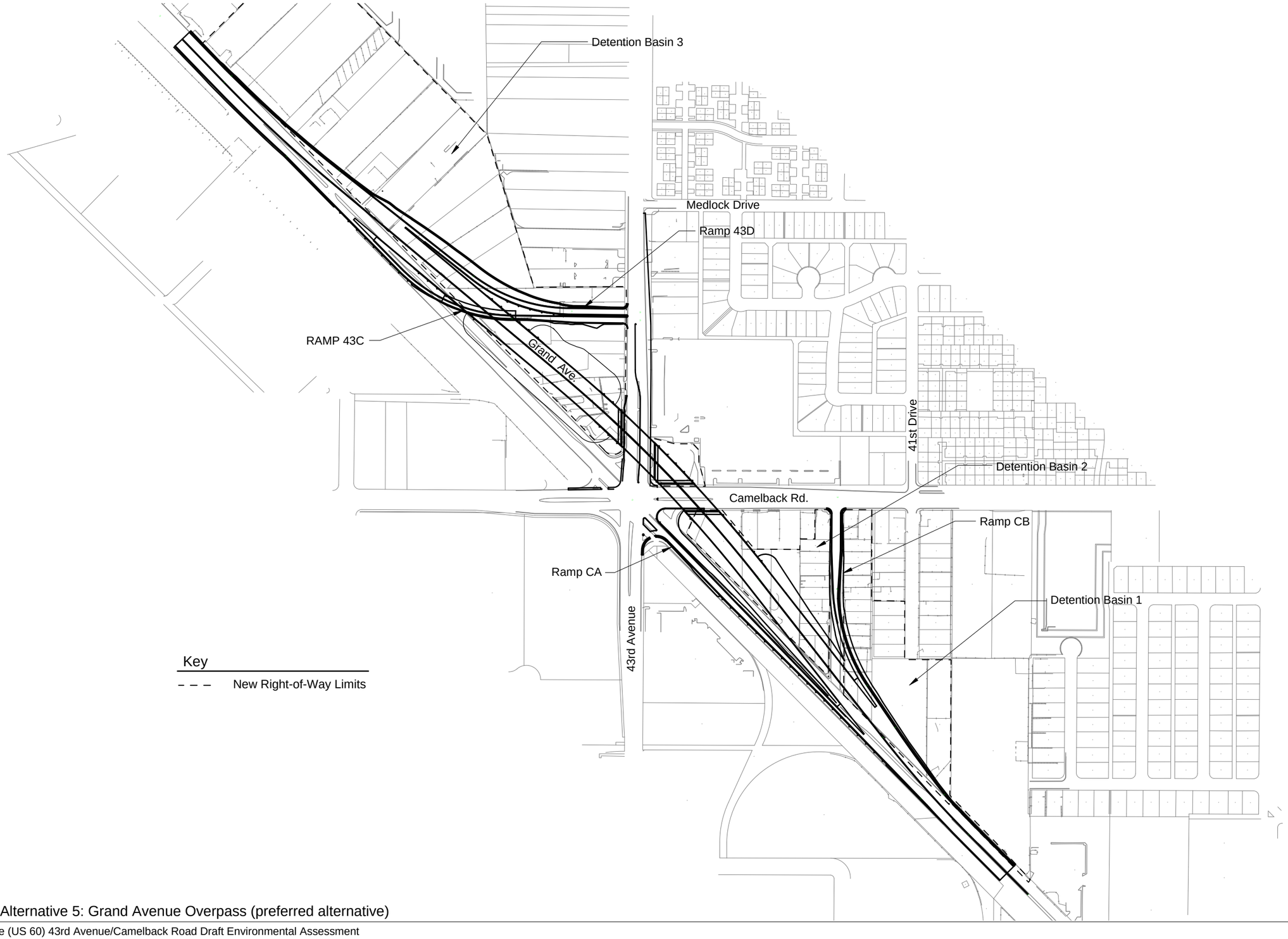


Figure 8. Alternative 5: Grand Avenue Overpass (preferred alternative)

III. DESIGN FEATURES OF THE PREFERRED ROADWAY IMPROVEMENTS

The following information describes the roadway features of the preferred alternative for Grand Avenue at 43rd Avenue and Camelback Road, including the roadway's horizontal and vertical alignment, access control, right-of-way requirements, drainage and floodplain considerations, traffic control, utilities, and other features. For more specific details of this alternative, refer to the Design Concept Report (DCR) (2000). A copy of this report is available for review at the ADOT EPG office located at 205 South 17th Avenue, Room 213E, Phoenix, Arizona.

A. Horizontal and Vertical Alignment

The proposed improvements would align Grand Avenue to the northeast of its existing alignment over Camelback Road and 43rd Avenue. The overpass would have a design speed of 55 miles per hour (mph). The total length of the overpass is approximately 4,900 feet. There would be three lanes in each direction with lane widths of 12 feet, and travel lane shoulders would be eight feet outside and four feet inside, except on bridges where outside shoulders would total 10 feet. The overpass structure would have a minimum vertical clearance of 16.5 feet at bridge crossings. According to the DCR, the ramp structures would have a total width of 16 feet including shoulders, and a minimum vertical clearance of 16.5 feet at bridge crossings.

B. Access and Access Control Features

Within the proposed project area, access to Grand Avenue would be limited to ramp connections. Ramp CA would provide a southeast-bound on-ramp from the 43rd Avenue and Camelback Road intersection (Refer to Figure 8). Ramp CB would provide access for motorists exiting northwest-bound onto Camelback Road. A southeast-bound off-ramp, Ramp 43C, would provide access to 43rd Avenue, and Ramp 43D would provide an on-ramp from 43rd Avenue to northwest Grand Avenue.

Off-ramp connections would be constructed as single lane ramps that widen to allow for direction designated travel at their terminals with their respective arterial (43rd Avenue or Camelback Road). The southeast-bound off-ramp would have two right-turn lanes at the ramp terminal, and the northwest-bound off-ramp would have one right-turn lane and two left-turn lanes. Both on-ramps would have two lanes that merge into one lane as they approach Grand Avenue.

C. Right-of-Way

The preferred alternative would require approximately 15.4 acres of new right-of-way. Existing right-of-way along Grand Avenue is 90 to 101 feet from the existing centerline. The existing right-of-way is 98 feet along Camelback Road and 98 to 110 feet along 43rd Avenue.

Thirty-nine parcels would be affected by a total-take of property, while one additional parcel would be a partial-take. A total of 27 property owners would be affected by implementation of this alternative. In addition, temporary construction easements (TCE) would be required at three locations.

D. Drainage, Floodplain Considerations, and Structures

Drainage facilities would be designed in accordance with ADOT Roadway Design Guidelines. Drainage impacts would be primarily mitigated by the construction of three detention basins within the project area totaling 170 acre-feet of storage. Some additional flooding could occur east of the Camelback Road and 43rd Avenue intersection. ADOT would evaluate expanding Detention Basin 2 during final design. The detention basins would meet the following ADOT criteria including: fencing of the basin, vehicle access, a service road around the perimeter, 3:1 maximum slopes, and gravity drain. Because the soil types are poor for retention of water, Detention Basin Number 3 would outfall to the storm drain located in 43rd Avenue. The location of the basins are shown in Figure 8.

Channels and culverts would be utilized to maintain and direct flows to the detention basins. These channels would be designed using ADOT criteria. All drainage control features and detention basin storage capacities would be designed to capture flows up to a 50-year rainfall event. Detention outfall sites would be lined with rip-rap. The preferred alternative's storm water detention system would at a minimum, replace the current system's storage capacity.

E. Traffic Control

Traffic control would be in accordance with Part VI of the *Manual on Uniform Traffic Control Devices for Streets and Highways*, published by the US Department of Transportation, FHWA (1998), and ADOT's Traffic Control Supplement (1996). In addition, traffic control during construction on the City of Phoenix's streets may be developed in accordance with the *City of Phoenix Traffic Barricade Manual,* 1998. Traffic restrictions would be minimal during construction because the proposed improvements would include an offset grade-separation bypass of Grand Avenue and the affected private property would be acquired before construction.

Maintenance of traffic and access would be addressed in the traffic control plan. Key aspects would include: 1) maintenance of traffic on Grand Avenue, 43rd Avenue and Camelback Road and access to the adjacent businesses and residences; 2) no impact on the BNSF railroad mainline during construction of the ramps; 3) maintenance of traffic flow during bridge construction and utility relocations. Traffic plans would be coordinated with the ADOT Engineer and the Cities of Phoenix and Glendale's Construction Traffic Control Sections.

The construction of the relocated Grand Avenue would be achieved with few roadway closings and detours. Most of the construction of the new realigned Grand Avenue would be completed without disrupting existing traffic flows since the work is off the existing roadway, and would not interfere with BNSF Railway operations. The construction of the structures over 43rd Avenue and Camelback Road would require temporarily closing the intersection and detouring traffic while setting bridge girders. The construction sequencing for connecting the roadway to the existing Grand Avenue would be completed in stages with minimum shifting of traffic to detour routes.

No daytime detours are anticipated. All traffic detours would occur at night or on weekends. The proposed detour routes are Bethany Home Road, 51st Avenue, Indian School Road, and 35th Avenue. Short-term shifting of traffic and lane restrictions would occur during construction of new curbing, street connector construction, and installation of new traffic signals.

F. Utilities

Utilities within the project area include Salt River Project (SRP) Irrigation and Power (69 kV), Arizona Public Service (APS), US West (telephone), Southwest Gas (natural gas), MCI Worldcom, Cox Communication, and the Cities of Phoenix and Glendale water lines, storm drains, sewer lines, street lighting, and traffic signals. The majority of the utilities are located underneath Grand Avenue, 43rd Avenue, and Camelback Road, although others are located within the BNSF right-of-way. In addition, a 230 kV APS overhead power line runs along Grand Avenue on the south side.

The preferred alternative would require the removal and relocation of the SRP 69 kV overhead power line on the north side of Camelback Road. The City of Glendale's sanitary and water lines would be relocated from the existing Grand Avenue north of the confluence of the ramp and 43rd Avenue, and then south under 43rd Avenue to the Camelback Road and 43rd Avenue intersection. The 8-inch sewer line crossing through detention basin #3 would also be relocated. The Southwest Gas 2-inch line would also be relocated from its current location on the existing Grand Avenue alignment to Glendale's sanitary and water line alignment.

Other utilities that would be relocated include SRP Irrigation and Cox Communication. The contractor would provide notice to utility customers at least 14 days prior to any disruption of service involving the removal or relocation of utilities, if applicable. In addition, the contractor would notify adjacent property owners and tenants at least 14 days prior to the start of construction.

G. Other Features

The existing signal at 43rd Avenue and Camelback would be removed and replaced. Within the project area, two new traffic signals would be constructed on 43rd Avenue and Camelback Road. Street lighting would be provided on both sides of the new Grand Avenue alignment, and also along the ramps. SRP would install, operate, and maintain the lights. An interagency governmental agreement (IGA) would be needed for the future operation and maintenance of these lights, between ADOT and the Cities of Phoenix and Glendale.

All embankment slopes and detention basins, would be covered with crushed granite and low-water use plants. Portions of the existing Grand Avenue would remain as a utility corridor. The remainder of the existing alignment of Grand Avenue would be removed and landscaped. Trees would be planted to screen the detention basins from view of the road, and from the residential area. Embankment slopes would be 3:1 maximum, but consideration should be given to flatten these to 4:1 within high visibility areas.

H. Design Exceptions

No design exceptions were identified for this project.

IV. AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The following information describes the affected environment or existing conditions within the project area, and presents the potential effects of the proposed project. Measures to avoid or minimize impacts have also been identified for each component of the environment and are summarized in the mitigation measures on page v of this document. The agency scoping and public involvement activities undertaken as part of the environmental process are presented in Chapter VI. For this document, the north-south and east-west limits of the project area are approximately one-half mile on either side of the centerline of the existing Grand Avenue/43rd Avenue/Camelback Road intersection. Visual or scenic resources identified extend beyond these limits. The figures in the document depict a graphic representation of the width of the project area for illustrative purposes only.

The potential environmental impacts of the proposed improvements were evaluated based on both the context of the effects on the project area and the intensity or severity of impacts as defined in the CEQ regulations. The following table summarizes the environmental impacts of the proposed project.

Table 4. Results of Environmental Analysis

Environmental Consideration	Result of Alternative Evaluation
Ownership, Jurisdiction, and Land Use	No substantial impact
Social and Economic Considerations	No substantial impact
Title VI/Environmental Justice	No substantial impact
Cultural Resources	No substantial impact
Section 4(f) Resources	No impact
Air Quality	No substantial impact
Noise	No substantial impact
Landscape/Vegetation Removal/Invasive species	No impact
Vegetation and Wildlife	No impact
Threatened, Endangered, and Sensitive Species	No impact
Visual Resources	No substantial impact
Drainage and Floodplain Considerations	No substantial impact
Water Resources, Section 404, NPDES	No impact
Materials Sources	No impact
Construction Debris Disposal	No impact
Hazardous Materials	Beneficial Impact
Secondary/Cumulative Impacts	No substantial impact

A. Ownership, Jurisdiction, and Land Use

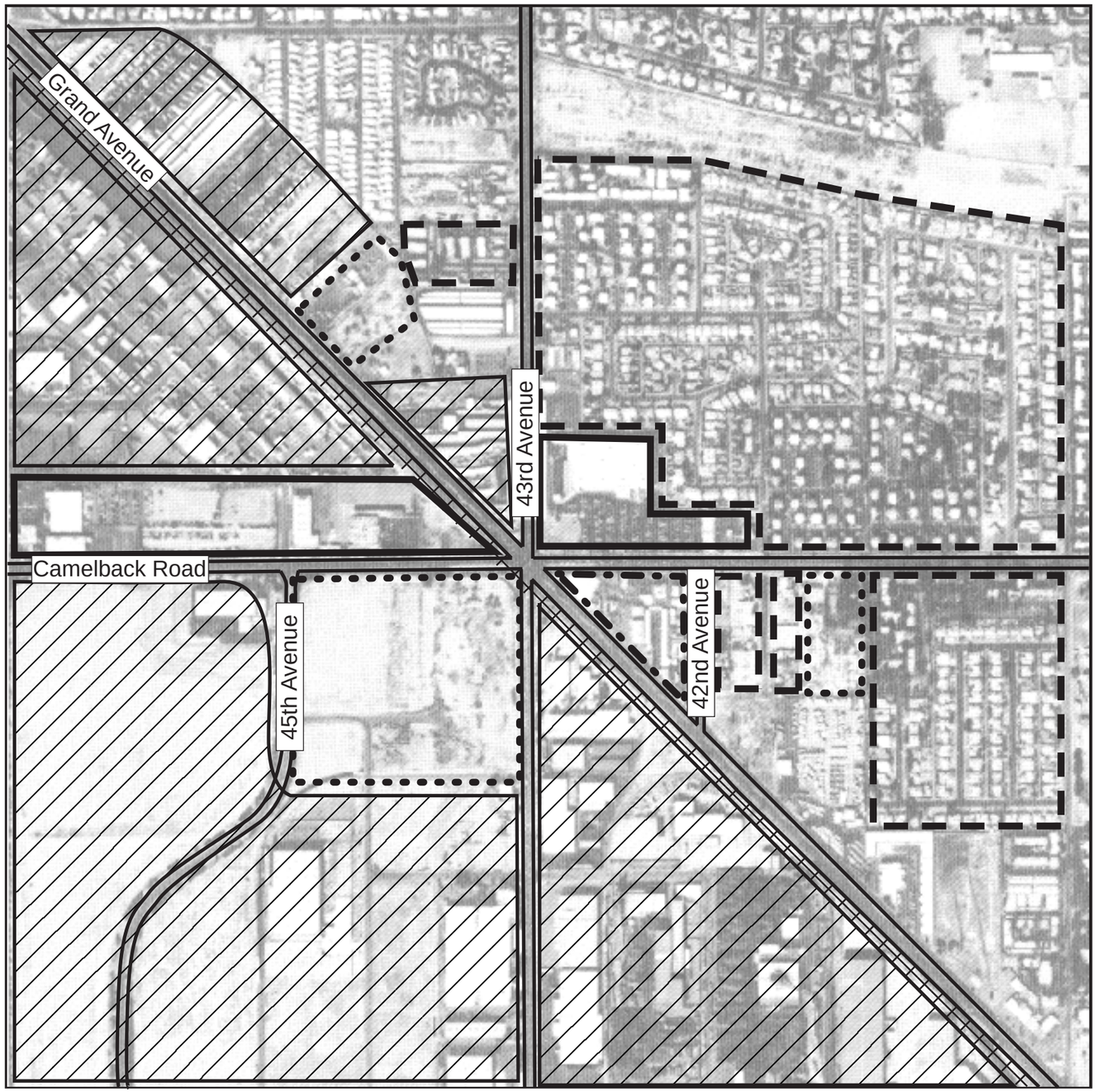
For the purposes of this assessment, land ownership is identified in terms of public or private ownership. Land ownership within the project area is primarily private holdings. Jurisdiction implies the authority to regulate land uses. The project area is within the jurisdictional boundaries of the Cities of Phoenix and Glendale.

Land use is a representation of the existing occupation and/or physical use of land. Land uses within the proposed project area were determined by field observations, and information provided in the MIS (ADOT 1998). Existing land uses within the corridor include residential, commercial, and industrial (refer to Figure 9).

Residential land uses are concentrated north of Camelback Road and east of 43rd Avenue. Other scattered residences are located south of Camelback Road along 41st Drive and 42nd Avenue. There are numerous industrial and commercial land uses within the project area. Some of the existing industrial and commercial developments located within the project area include: Home Depot, AM Auto Body, Grand Electric, Cardenal Car Stereo, Hawkes Radiator, Paradise Sports Grill, Atlas Auto Sales, Pritchetts Metal Products, Thrifty Ice Cream, Michigan Trailer Sales, Used Car Mega Store, Public Pool Supply, AMI Bumper and Hitch, and Arrowhead Mechanical. The MIS identifies industrial, commercial, and residential land uses, from the Cities of Phoenix and Glendale's land use planning documents, as occurring within the project area. According to the respective Cities General Land Use Plans, the unused portions of acquired ADOT right-of-way would be within these cities commercial designations for future use if permitted by ADOT.

There would be short-term impacts to existing land uses as a result of the project construction and during the relocation of utilities. Long term impacts include the acquisition of approximately 15.4 acres of right-of-way. The required right-of-way acquisition would be private parcels, totaling 40. A total of 39 full-takes and one partial-take would affect 27 property owners (refer to Figure 10).

Access to residences and businesses would be maintained during construction. There are no public service facilities such as hospitals, fire departments, or police stations located within the project area that would be impacted. Because the project would be aligned north of the existing section of Grand Avenue, only temporary traffic delays would occur for vehicles requiring access from Grand Avenue to businesses or individual residences. Grand Avenue, 43rd Avenue, and Camelback Road would be closed during construction for short periods for installation of bridge crossings. The access control and traffic control plans would be prepared following ADOT standard guidelines.



Key

- Commercial
- Office/Business Park
- Residential
- Vacant
- Industrial
- BNSF Railroad

Image Source: Landiscor aerial information, Phoenix

Figure 9. Existing Land Use

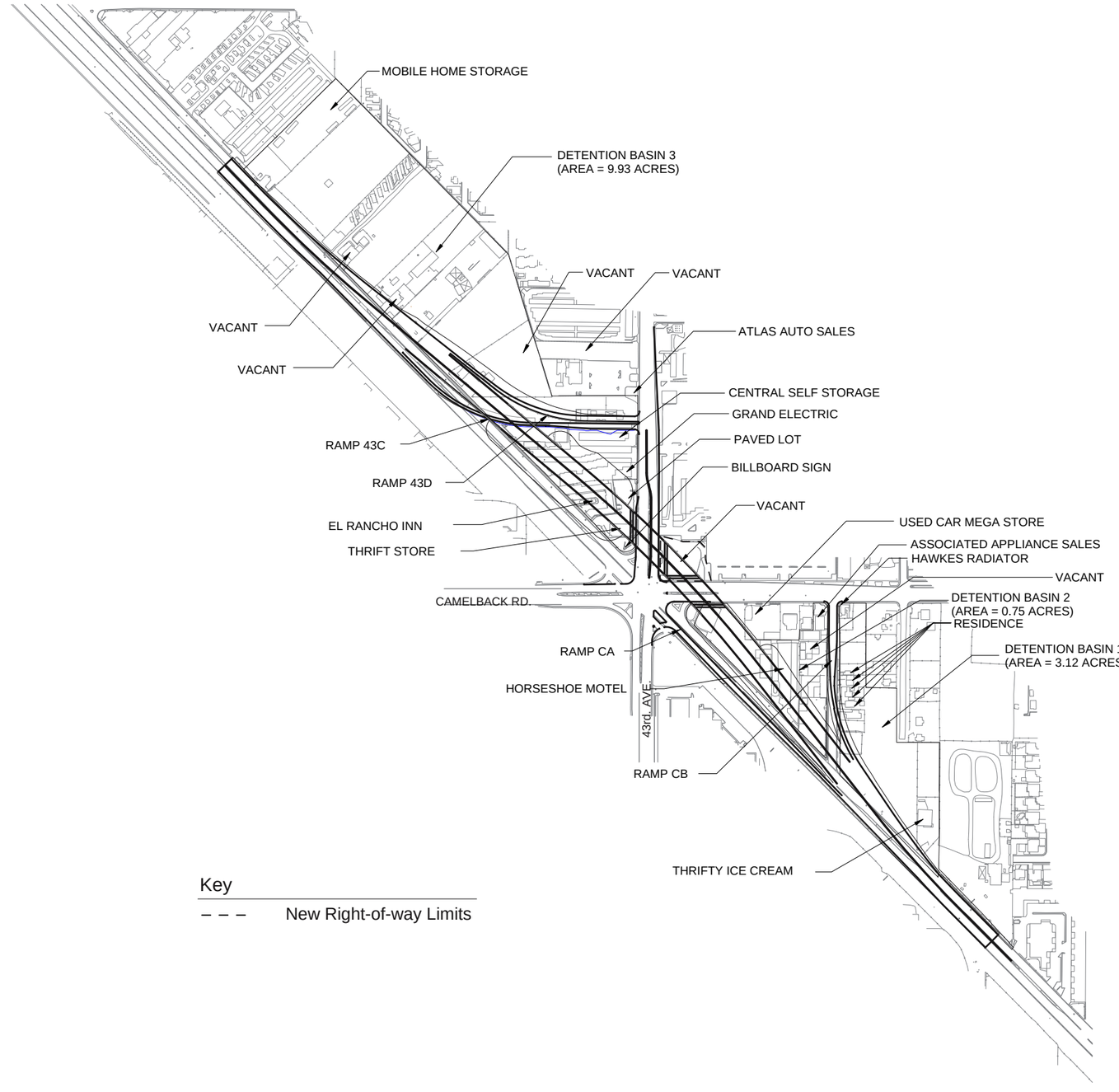


Figure 10. Potential Business and Residential Acquisitions

The parcels required for new right of way would be acquired primarily from private property owners. Property owners would be compensated at fair market value for property acquired for project right-of-way in accordance with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act,* as amended in 1987. Existing and future land uses would not be prohibited from continuing as designated in the Cities of Phoenix and Glendale General Plans. Therefore, no substantial impacts to land uses, jurisdiction, or ownership would be anticipated.

B. Social and Economic Considerations

Grand Avenue is a multi-modal transportation corridor. Although private automobile travel is the primary transportation use, bus travel and pedestrian travel also occur. Pedestrian sidewalks located along Grand Avenue would be removed within the construction limits of the proposed grade-separation structure. These facilities would be relocated to follow the northwest-bound off-ramp to Camelback Road and the northwest-bound on-ramp from 43rd Avenue. There would be no sidewalks on the overpass structure. Bike riders choosing to use the roadway shoulder would be permitted under existing Arizona State law the same as on other roadways within the state, but no designated bike lanes would be included as a part of this project.

The current pedestrian access across the intersection of Grand Avenue, 43rd Avenue, and Camelback Road is difficult, because of heavy traffic, intersection design, and conflicts with vehicles turning into businesses adjacent to the intersection. These pedestrian conflicts also affect bus commuters accessing bus stop location, which are located near the intersection. Eliminating the six-legged intersection would improve pedestrian access across this intersection, by reducing delay times and traffic volume.

School buses currently transport students back and forth across Grand Avenue at 43rd Avenue and Camelback Road. Potential traffic delays or congestion due to construction activities, could impact school transportation efforts. During construction, traffic would be maintained on Grand Avenue, 43rd Avenue and Camelback Road. ADOT would address this issue in the traffic control plans (refer to Section III). In addition, the ADOT District Office would notify the Alhambra and Phoenix Union School Districts at least 14 days prior to any ground disturbing activities to discuss alternate routes if necessary.

The Regional Public Transit Authority (RPTA), the public bus service, provides routes along each of the three streets. The Grand Avenue route, the Yellow Line, operates every 30 minutes and provides rider ship between downtown Peoria and the State Capitol. Route 50 and Route 43 are designated routes for Camelback Road and 43rd Avenue respectively. Rider ship information for May 1998, shows a daily weekday rider ship of 1,919 for the Yellow Line, and 5,576 for Route 50. There is no information currently available from RPTA for Route 43.

There are three RPTA bus stops along Grand Avenue that would be affected by the proposed improvements. Buses on the RPTA Yellow Line would be required to exit Grand Avenue to make transfers between Route 50 and Route 43. The horizontal alignment of the southeast-bound on-ramp would be located to allow for a future bus bay near the intersection of 43rd Avenue and this respective on-ramp, but is not considered a part of this project. ADOT would coordinate with RPTA to replace or relocate bus stop locations.

On March 14, 2000, City of Phoenix voters approved a 0.4 percent sales tax increase to improve the existing bus service and provide a rapid transit light rail system within the City of Phoenix, including planning for expansion into other cities of the metropolitan area. According to the November 2, 2000 Citizens Transit Commission (CTC) vote of 13 to 1, with 1 abstention, the CTC approved the planned route following along 19th Avenue. This initiative would also provide more buses and allow for additional bus routes throughout the City of Phoenix, although specific details of those routes were not available at this time. There are currently no other known plans for any other multi-modal uses within the project area.

Many of the residents adjacent to the project area likely commute to jobs within the Phoenix metropolitan area. The industrial and commercial businesses located within and/or near the project area afford employment opportunities to nearby residents.

Short-term social and economic impacts would occur during construction of the project. Access to residences and businesses would be maintained during all phases of construction, but could be inconvenient because of the traffic congestion typically associated with construction activities. People living or working in the immediate vicinity of the roadway would be exposed to increased levels of noise and dust due to the construction activities, but these impacts would be temporary. The contractor would adhere to Maricopa County Rule 310 and 360 regarding fugitive dust emissions and new source performance standards, respectively, during construction.

Other impacts directly related to construction include the potential local employment opportunities as part of the construction workforce. During construction some workers may purchase food and other commodities, and generate revenues for the nearby businesses. Therefore, the proposed project could beneficially impact local residents and nearby businesses during construction.

Because the proposed Grand Avenue grade-separation would be aligned northeast of the existing alignment, temporary traffic delays would occur during construction. Grand Avenue, Camelback Road, and 43rd Avenue may be closed during construction for short periods. The duration of the closures and final detour routes have not been determined. Access control and traffic control plans would address construction-related safety and access problems by maintaining access to businesses and residences during construction. The contractor would notify the local residents and businesses at least 14 days prior

to any ground disturbing activities. In addition, ADOT District Construction Office would notify and coordinate with RPTA prior to any ground disturbing activities if closures or detours are necessary that could impact bus travel to establish alternate bus routes and temporary bus stops. Other short-term impacts would include increased noise levels and visual impacts from typical construction-related activities, although these impacts are not anticipated to be substantial.

After completion of the Grand Avenue grade-separation, motorists seeking access from Grand Avenue to the remaining businesses at the 43rd Avenue and Camelback Road intersection would be required to utilize off-ramps and connector streets. This out-of-direction travel would require longer travel time and inconvenience motorists. These longer travel times would be minimal when compared to the existing delay times. By eliminating the six-legged intersection and improving the LOS, motorists would experience a net gain in the overall function and operation within the project area.

In summary, the proposed improvements would alter the existing RPTA Grand Avenue Yellow Line as it currently operates today. Transferring passengers between the RPTA Yellow Line, and Route 50 and 43 would be more difficult, although ADOT would coordinate and evaluate the removal and relocation of bus stops to minimize or eliminate impacts to RPTA bus passengers. RPTA indicated in early planning stages at the 51st Avenue and Bethany Home Road intersection Agency Scoping Meeting for the proposed improvements to that intersection, that RPTA would be able to work with ADOT to minimize impacts related to the proposed Grand Avenue improvements. ADOT would coordinate with RPTA to minimize impacts and coordinate/plan temporary bus traffic detour routes and bus stops. No other multi-modal transportation uses are anticipated to be impacted by the proposed improvements.

Residences and commercial/industrial businesses that would be removed and relocated would be compensated at fair market value. If permitted by ADOT, unused portions of newly acquired right-of-way could be used for commercial uses. According to the respective Cities General Land Use Plans these areas are zoned for future commercial land uses. In addition, neighborhood continuity would not be substantially altered from existing conditions, because cross directional vehicular and pedestrian traffic would still be possible. Some out-of-direction travel is possible depending on the motorists destination, but overall the results of improving the operational capacity and/or reducing volumes at the remaining 43rd Avenue and Camelback Road intersection would benefit motorists and pedestrians seeking opportunities to travel across the Grand Avenue corridor.

In addition, the proposed project would decrease delay times and congestion at the resulting 43rd Avenue and Camelback Road intersection, which would improve ingress and egress to businesses and local residences. As a direct result of the project, pedestrian delay times at the remaining intersection would be greatly improved, which would improve the ability for bus passengers to expedite travel times. Therefore,

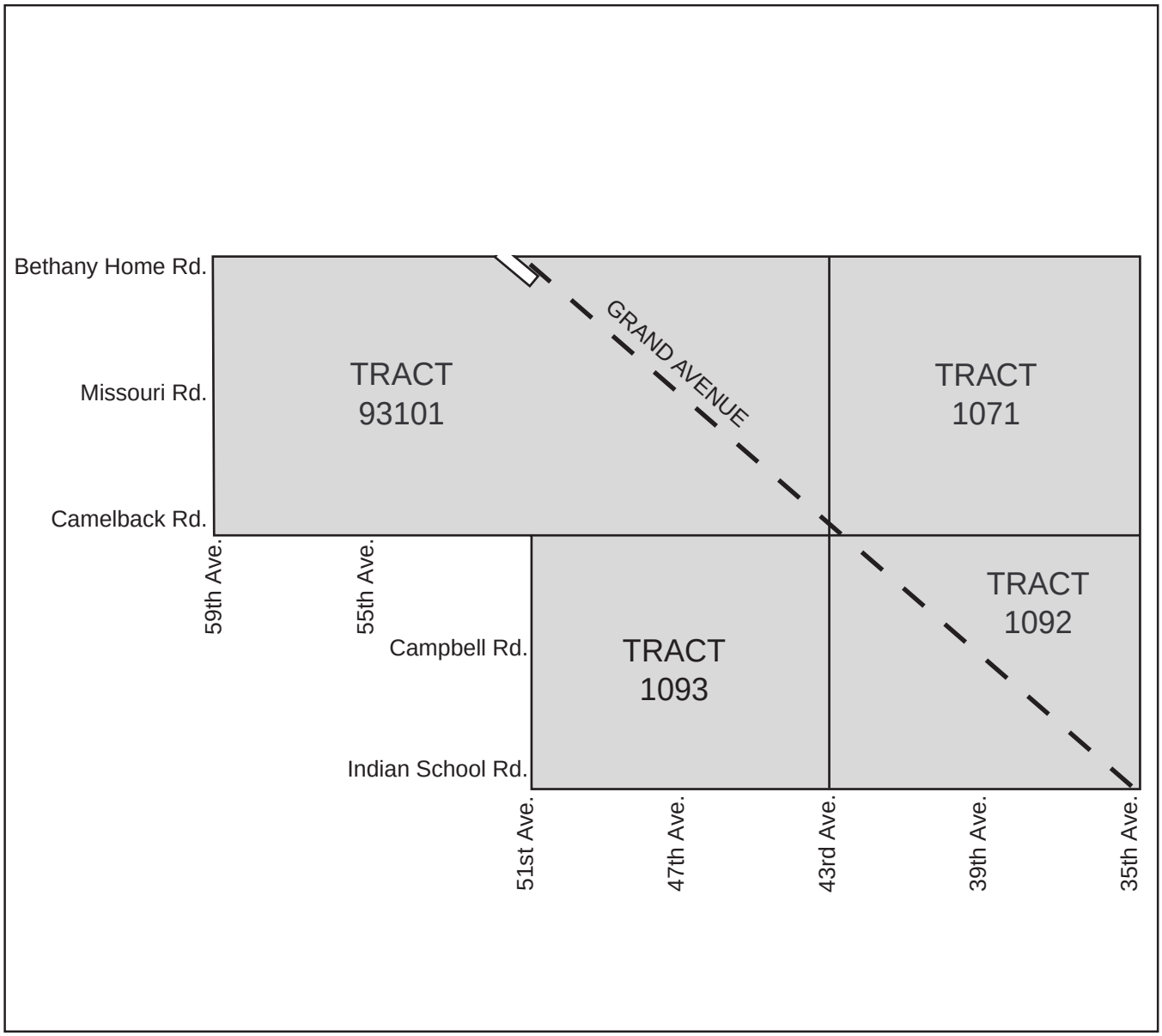
the proposed improvements both during and after construction would not substantially impact the socio-economic environment of the project area.

C. Title VI of the Civil Rights Act of 1964 and the Executive Order Relating to Environmental Justice

Under Title VI of the Civil Rights Act of 1964, Federal agencies are required to ensure that no person is excluded from participation in, denied benefits of, or subjected to discrimination under any program or activity receiving Federal financial assistance on the grounds of race, color, religion, national origin, sex, age, or disability. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed by President Clinton on February 11, 1994, requires Federal agencies to identify, and address as appropriate, disproportionately high and adverse effects on minority and low-income populations.

To be consistent with the requirements of Title VI and Environmental Justice, the demographic characteristics of the population of the project area were examined to determine if minority and low- income populations would be disproportionately affected by the proposed project. Minority racial populations as defined by the U.S. Census include the following racial categories: African American, American Indian/Eskimo and Aleut (Native American), Asian and Pacific Islander, and "other race." In addition, the category "Hispanic" was used for all Hispanics (regardless of race), even for those Hispanics who identified themselves as "white."

The MAG 1995 Special Census for Maricopa County and the U.S. Department of Commerce, Bureau of the Census, 1990 Census of Population and Housing are used to compare and contrast the demographic and economic characteristics of the project area with those of the City of Phoenix and Maricopa County. Census tracts are small, relatively permanent statistical subdivisions of a county, and do not cross county boundaries (refer to Figure 11). Block groups, as used in this document, are even smaller statistical subunits of census tracts (refer to Figure 12). For this document, block groups are used as the smallest level of census resolution representing 1990 census data. Enumeration districts are similar to block groups but reflect information from the 1995 Special Census for Maricopa County (refer to Figure 13). Both 1990 and 1995 census data are reported in the following tables in order to represent the use of the most recent statistical numbers for the smallest geographic area. The statistics reported may extend outside the project area; therefore, the exact population and demographic characteristics of the project area may vary from these data. The shaded numbers in each of the following tables represent those populations that are higher when compared to the Cities of Phoenix and Glendale and/or Maricopa County.



Key

Census Tract

Figure 11. Census Tracts

NORTH

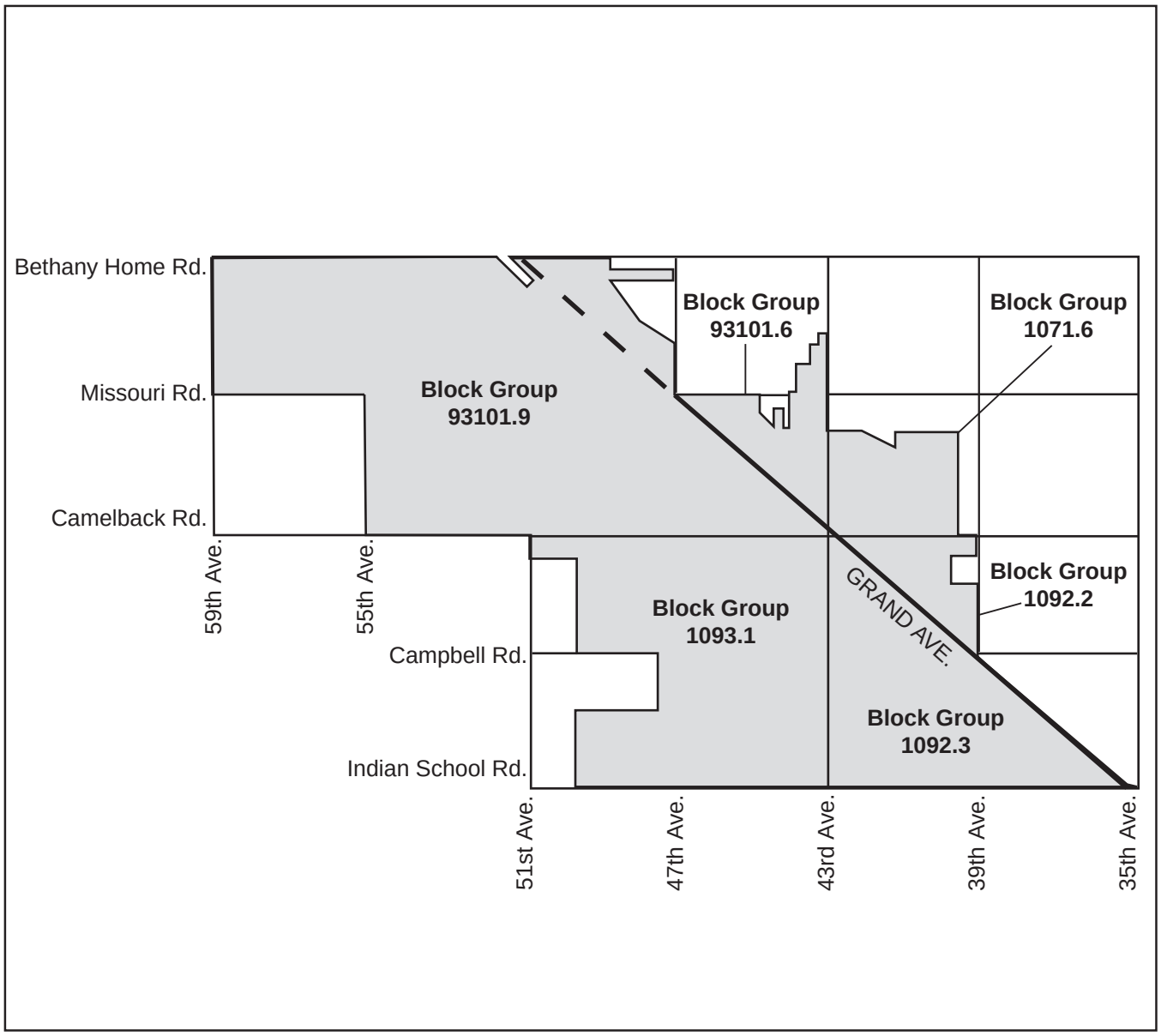
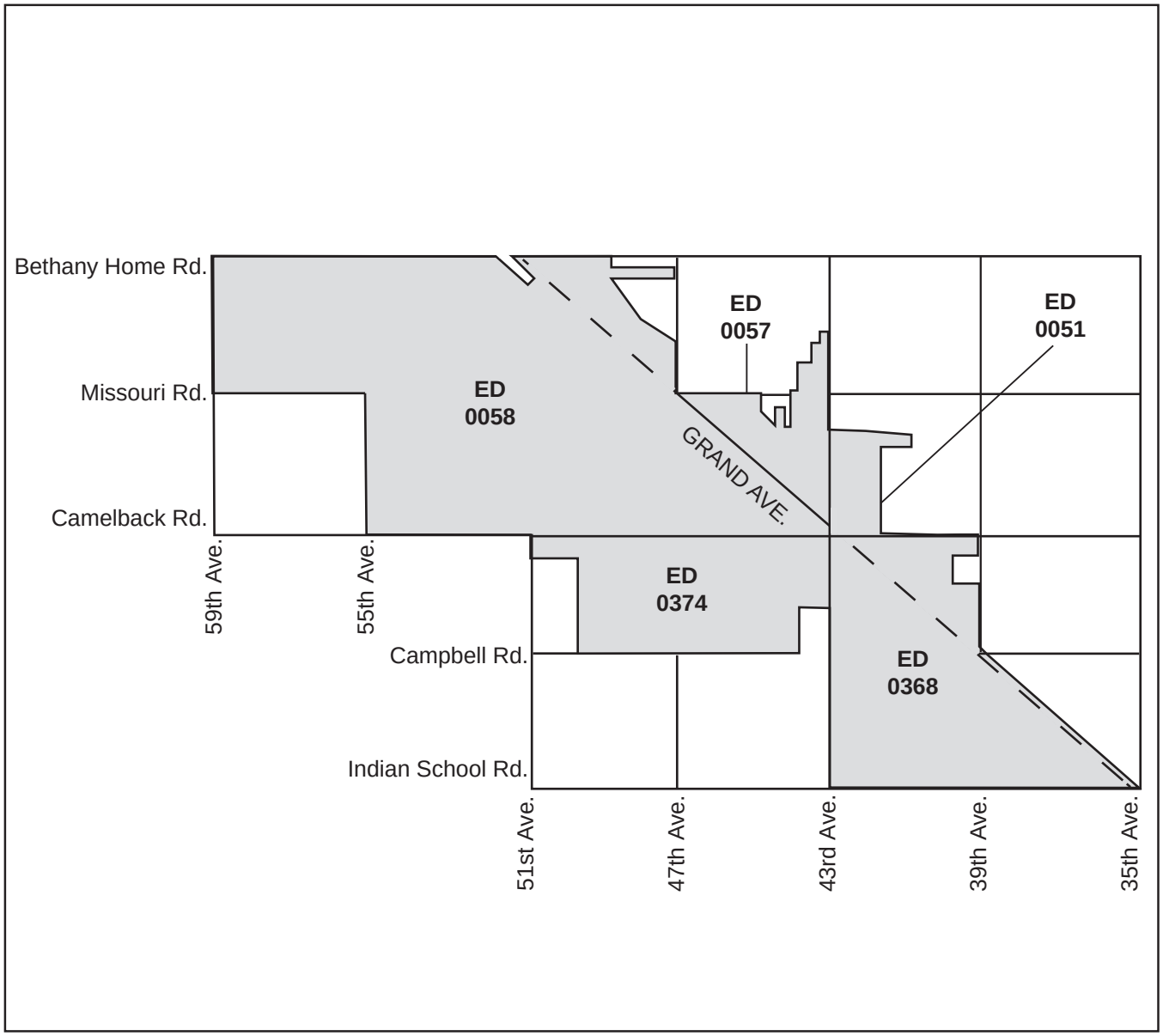


Figure 12. Census Block Groups



Key

Census Enumeration Districts

Figure 13. Census Enumeration Districts

NORTH

1. Race

According to the 1995 MAG Special Census data, the project area is mostly white (53.6%) (refer to Table 5). ED 368 and ED 374 contain a large population of Hispanics with 49.6% and 47.6%, respectively. ED 374 contains 44.5% represented as Other, but these populations may include a portion of the reported Hispanic population, depending on census survey responses from individual households. Both Native Americans and African Americans are more prevalent within the project area, on average, than those populations within the Cities of Phoenix and Glendale and Maricopa County.

Table 5. 1995 Racial Demographics

Area	Total Population	White		African American		Native American		Asian		Other		Hispanic	
		#	%	#	%	#	%	#	%	#	%	#	%
ED 57	370	284	76.8	4	1.1	21	5.7	12	3.2	49	13.2	82	22.2
ED 58	413	229	55.4	66	16.0	9	2.2	19	4.6	90	21.8	94	22.8
ED 151	730	377	51.6	95	13.0	36	4.9	29	4.0	193	26.4	214	29.3
ED 368	1039	522	50.2	108	10.4	72	6.9	69	6.6	268	25.8	515	49.6
ED 374	859	415	48.3	35	4.1	5	0.6	22	2.6	382	44.5	409	47.6
All EDs	3411	1827	53.6	308	9.0	143	4.2	151	4.4	982	28.8	1314	38.5
City of Phoenix	1,149,417	835,860	72.7	59,473	5.2	20,405	1.8	22280	1.9	211399	18.4	303084	26.4
City of Glendale	182,615	144,626	79.2	8129	4.5	2688	1.5	4353	2.4	22,819	12.5	36,093	19.8
Maricopa County	2,551,765	2019556	79.1	93,358	3.7	45,843	1.8	51231	2.0	341777	13.4	522487	20.5

Source: Maricopa Association of Governments, 1997.

2. Age 60 Years and Over

The 1995 MAG Special Census data indicate that the percentage of people over 60 years of age within the study area varies between 3.6% and 13.0% (refer to Table 6). The average percentage of elderly living within these EDs is 8.2%, which is lower than Phoenix, Glendale, and Maricopa County.

Table 6. 1995 Percentage of Population Greater Than or Equal to 60 Years of Age			
		> 60 Years of Age	
Area	Total Population	#	%
ED 57	370	48	13.0
ED 58	413	15	3.6
ED 151	730	64	8.8
ED 368	1039	50	4.8
ED 374	859	103	12.0
All EDs	3411	280	8.2
City of Phoenix	1,149,417	142,229	12.4
City of Glendale	182,615	20,193	11.1
Maricopa County	2,551,765	411,213	16.1

Source: Maricopa Association of Governments, 1997.

3. Low-Income Population

The 1995 Special Census data indicate that Tracts 93101, 109200, and 109300 were substantially higher than the Cities of Phoenix and Glendale (refer to Table 7). Tract 107100 is slightly lower at 9.8% when compared to the overall tract average, and also when compared to the Cities of Phoenix and Glendale, and Maricopa County.

Table 7. 1995 Percentage of Households Living Below Poverty			
		Below Poverty	
Area	Households With Income Reported	#	%
Tract 93101	1684	322	19.1
Tract 107100	2040	200	9.8
Tract 109200	676	129	19.1
Tract 109300	798	138	17.3
All Tracts	5198	789	15.2
City of Phoenix	260,125	34,332	13.2
City of Glendale	42,583	4857	11.4
Maricopa County	608,777	63,392	10.4

Source: Maricopa Association of Governments, 1997.

4. Mobility Disability

The 1990 Arizona Department of Economic Security census data indicate the percentage of people living in Maricopa County who claimed a mobility disability or a self-care disability was 13.0% (refer to Table 8). Three Block Groups within the project area were higher when compared to the Cities of Phoenix and Glendale, and Maricopa County: Tract 931, Block Groups 6 and 9, and Tract 1092, Block Group 3.

Table 8. 1990 Percentage of Population with Mobility Disability			
Area	Population > 16 Years of Age	Mobility Disability	
		#	%
Tract 931, Block Group 6	339	98	28.9
Tract 931, Block Group 9	13	6	46.2
Tract 1071, Block Group 6	874	40	4.6
Tract 1092, Block Group 2	762	87	11.4
Tract 1092 Block Group 3	8	3	37.5
Tract 1093, Block Group 1	883	118	13.4
All Block Groups	2879	352	12.2
City of Phoenix	732,797	97,239	13.3
City of Glendale	108,107	13,790	12.8
Maricopa County	1,595,853	207,610	13.0

Source: U.S. Department of Commerce, Bureau of the Census, 1992.

5. Female Head of Household

The 1995 Special Census data indicate that the percentage of female head of household average is 14.0% within the project area (refer to Table 9). While this average is higher than those of Phoenix, Glendale, and Maricopa County, two Block Groups are noticeably higher: Tract 1071, Block Group 6 (15.8%) and Tract 1092, Block Group 2 (17.8%).

Table 9. 1990 Percentage of Female Head of Household			
Area	Total Households	Female Head of Household	
		#	%
Tract 931, Block Group 6	215	21	9.8
Tract 931, Block Group 9	6	0	0.0
Tract 1071, Block Group 6	424	67	15.8
Tract 1092, Block Group 2	507	90	17.8
Tract 1092 Block Group 3	6	0	0.0
Tract 1093, Block Group 1	414	42	10.1
All Block Groups	1572	220	14.0
City of Phoenix	370,119	41,758	11.3
City of Glendale	53,871	6463	12.0
Maricopa County	808,162	79,646	9.9

Source: U.S. Department of Commerce, Bureau of the Census, 1992.

The proposed project has been developed in accordance with the Civil Rights Act of 1964 (Title VI), as amended by the Civil Rights Act of 1968 (Title VIII), and conforms to the requirements of the Americans with Disabilities Act of 1990. Public comments on the proposed alternatives were solicited as part of this

EA. This process provides an opportunity for the public to be involved with the decision-making process. In general, the public supported construction of the grade-separation structure. Refer to Section VI.

According to the FHWA Interim Region 9 Guidance (May 1997), if the population is dispersed and not an identifiable minority or low-income community, then it is not considered a "distinct" group and there would be no adverse effect on minority or low-income populations. There are no distinct groups located in the project area based on the existing census data. Even though the proposed improvements would require the acquisition of several businesses and a few residences within the project area, these acquisitions would not disproportionately impact any low-income or minority groups. In addition, property owners would be compensated at fair market value for property acquired for project right-of-way in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act, as amended in 1987.

Direct or indirect noise impacts and other potential impacts such as air quality, access, and neighborhood continuity were evaluated in this EA. It was determined that the proposed improvements would not substantially impact noise quality, neighborhood continuity or access. No potential air quality impacts were identified. ADOT completed a noise evaluation, which included potential impacts to residences and occupants within the proposed project area. This evaluation included areas with relatively high numbers of low-income an minority populations. The residential area just east of the northwest bound off-ramp was reevaluated by ADOT to insure that reasonable and/or feasible noise abatement would or would not be possible. The residences are currently impacted and would be impacted in the 2025 design year regardless of any improvements. This is due to the fact that noise sources are generated from traffic associated primarily with Camelback Road and 43rd Avenue. Because the proposed improvements would increase noise levels above both the existing conditions and No Build scenario, ADOT evaluated the inclusion of noise walls. It was determined that the cost of the proposed abatement measures would be nearly double the ADOT Policy and therefore, would not be considered as a reasonable alternative. Therefore, the proposed project would not have a disproportionately effect, either direct or indirect, upon minority, low-income, elderly, or handicapped persons and would not substantially impact any of these populations within the project area.

D. Cultural Resources

A number of Federal and State Acts have been established to provide protection for cultural resources and to ensure "future generations a genuine opportunity to appreciate and enjoy the rich heritage of our Nation (Public Law 89-665). Cultural resources (historic properties) must be evaluated under each of these Acts to ensure adequate protection of our cultural heritage. In addition to acts that protect historic properties, the American Indian Religious Freedom Act, 1978 (AIRFA), guarantees access to religious or sacred sites that are located on Federal land.

Historic properties include prehistoric and historic districts, sites buildings, structures or objects included in or eligible for inclusion in the National Register of Historic Places (NRHP). Historic properties may be eligible for nomination to the NRHP if they "...possess integrity of location, design, setting, materials, workmanship, feeling and association..." and if these resources are either associated with (A) significant themes in history, or (B) significant persons in history, or if the (C) embody distinctive construction characteristics or works of a master, or (D) have the potential to yield information important to history or prehistory.

Four cultural resources surveys have occurred within the project area. Two archaeological surveys were conducted in 1989 and 1993. An historic building survey, which covered a portion of the current project area, was conducted in 1992 (Woodward 1996). A Class III intensive pedestrian survey of the entire project area was completed by ADOT in 2000. The results of this survey are reported in *A Cultural Resources Survey Of Four Intersections Along Grand Avenue (27th Avenue And Thomas Road, 43rd Avenue And Camelback Road, 51st Avenue And Bethany Home Road, And 91st Avenue And SR 101 Loop), Maricopa County, Arizona.* (Grafil 2000).

Eleven structures of historic age and two historic alignments have been identified within the proposed project area. Ten of these were recommended ineligible for inclusion on the NRHP (Woodward). One structure, a ca. 1910 farmhouse was originally recommended eligible for inclusion on the NRHP, in 1992. A recent re-evaluation recommends the property not eligible for inclusion on the NRHP, due to extensive modifications to the property. Grand Avenue, and the Burlington Northern Santa Fe Railroad are both historic alignments. However, both alignments have been substantially modified since their original construction, and are recommended ineligible for inclusion on the NRHP.

The cultural resources report has been reviewed by the SHPO. A concurrence letter was signed and dated November 7, 2000. This letter stated that SHPO concurs with all recommended eligibility determinations for the proposed undertaking. In addition, a Programmatic Agreement (PA) has been prepared and executed to address this project and the other seven proposed intersection improvement projects within the Grand Avenue corridor (Refer to Appendix B). This PA provides a detailed agreement of survey, testing procedures, and if necessary, data recovery. The PA ensures that FHWA adhere to all laws as defined in 36 Code of Federal Regulations (CFR) 800. Therefore, the testing and data recovery, if necessary, would appropriately mitigate any impacts to cultural resources. The proposed improvements at 43rd Avenue, Camelback Road, and Grand Avenue would not substantially impact any cultural resources because there are no NRHP eligible or potentially eligible properties within the project area.

According to *Arizona Department of Transportation Standard Specifications for Road and Bridge Construction*, Section 107.6 Archaeological Features (1990 Edition), if previously unidentified cultural resources are discovered during construction, the contractor would stop work immediately at the location,

take all reasonable steps to secure the preservation of those features, and notify the ADOT Engineer. ADOT would, in turn, notify the appropriate agency(ies) to evaluate the significance of the resource(s).

E. Section 4(f) Resources

Section 4(f) of the US Department of Transportation Act of 1966 states that the FHWA "may approve a transportation program or project requiring publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state or local significance, or land of a historic site of national, state, or local significance (as determined by the Federal, State, or local officials having jurisdiction over the park, area, refuge, or site) only if there is no prudent or feasible alternative to using that land and the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use" (49 U.S.C. 303).

A "use" of a Section 4(f) resource, as defined as in 23 CFR 771.135 (p) occurs: (1) when land is permanently incorporated into a transportation facility, (2) when there is a temporary occupancy of land that is adverse in terms of the statute's preservationist purposes, or (3) when there is a constructive use of land. A constructive use of a Section 4(f) resource occurs when the transportation project does not incorporate land from the Section 4(f) resources, but the project's proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired. For example, a constructive use can occur when:

1. the projected noise level increase attributable to the project substantially interferes with the use and enjoyment of a noise-sensitive facility of a resource protected by Section 4(f).

2. the proximity of the proposed project substantially impairs aesthetic features or attributes or a resource protected by Section 4(f), where such features or attributes are considered important contributing elements to the value of the resource. An example of such an effect would be the location of a proposed transportation facility in such proximity that it obstructs or eliminates the primary views of an architecturally significant historical building, or substantially detracts from the setting of a park or historic site which derives its value in substantial part due to its setting; and/or

3. the project results in a restriction on access which substantially diminishes the utility of a significant publicly owned park, recreation area or historic site.

There are no parks, recreation areas or wildlife and water fowl refuges, or any substantially important historic properties in the project area; therefore, there is no Section 4(f) involvement with the construction of the proposed project.

F. Air Quality

The 1990 Clean Air Act Amendments and the National Environmental Policy Act (NEPA) require that air quality impacts be addressed in the preparation of the environmental document. The level of effort utilized to evaluate these impacts may vary from a simplified description to a detailed micro scale analysis depending on factors such as the type of environmental document to be prepared, the project location and size, the meteorology of the project area, the air quality attainment status of the area, and the state air quality standards. The air quality analysis is documented in the technical report titled *Air Quality Report* and is available for review at the ADOT Environmental Planning Group office.

The project is located within the Maricopa County non-attainment area for particulate matter less than 10 microns (PM_{10}), carbon monoxide (CO), and ozone (O_3). The project has been included in the approved Transportation Improvement Program (TIP), date July 26, 2000, for ADOT's Fiscal Year 2001-2005. This TIP conforms to the State Implementation Plan and the Federal Implementation Plan. A finding of "Conformity" for the 2001-2005 TIP was made by U.S. Department of Transportation on July 31, 2000.

The State of Arizona has adopted the National Ambient Air Quality Standards (NAAQS) which were established to protect the public from air pollution related health hazards. Since the project is located in a non-attainment area for CO, conformity requirements of the Clean Air Act apply to this project and CO project-level modeling was required.

The modeling results indicate that the predicted maximum 1-hour CO concentrations at the intersection would be less than the NAAQS for CO under all scenarios modeled. Conversely, the 8-hour CO concentrations would be expected to exceed the standard under both the existing conditions and in the 2020 No Action Scenario. The modeling does indicate that the Preferred Build Alternative would reduce CO concentrations in the vicinity of the intersection (refer to Table 10). Based on the inclusion of the project in the approved TIP on July 26, 2000 for ADOT's Fiscal Year 2001-2005, and the project level modeling results, the Preferred Alternative demonstrates conformity with applicable air quality standards.

Table 10. Results of Air Quality Modeling

Scenario Modeled	Year	Maximum PM Peak Hour CO Concentration (ppm)[1]	
		1-hour Averaging Time	8-hour Averaging Time
NAAQS (acceptable limit)	N/A	35.0	9.0
Existing	1999	14.5	10.2
No Action Alternative	2020	13.2	9.2
Build Alternative	2020	9.4	6.6

[1] parts per million (ppm)

During construction, disturbance of the soil by heavy equipment would increase fugitive dust. This action may affect local air quality. Construction-related vehicle delays combined with exhaust emissions from construction related equipment may elevate levels of pollutants. PM_{10} and other volatile organic compounds (VOC) might be released by paving equipment. These impacts would be temporary; therefore it is not anticipated that the construction of the proposed improvements would result in any long-term air quality impacts. The contractor would adhere to Maricopa County Rule 310 and 360 regarding fugitive dust emissions and new source performance standards, respectively, during construction (refer to Appendix B). In addition, the contractor would be responsible for obtaining any necessary asbestos permits for demolition of any structures, if applicable.

Modeling demonstrated that the preferred build alternative would not lead to any CO violations of the NAAQS and all air quality standards would be adhered to during project construction activities; therefore, the proposed project would not substantially impact the local or regional air quality.

G. Noise

An analysis of potential noise impacts was conducted within the proposed project area, pursuant to the ADOT Noise Abatement Policy (NAP), dated March 21, 2000, and in accordance with the provisions of Title 23 of the Code of Federal Regulations (CFR) Part 772 - Procedures for Abatement of Highway Traffic Noise and Construction Noise. FHWA's Noise Abatement Criteria (NAC) are delineated by land use categories and their associated acceptable exterior noise levels (in dBA[1]) (refer to Table 11).

Table 11. Noise Abatement Criteria
Hourly (h) A-Weighted Sound Level in Decibels (dBA)

Activity Category	Description	Leq(h)
A	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities are essential if the area is to continue to serve its intended purpose.	57 dBA (Exterior)
B	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.	67 dBA (Exterior)
C	Developed lands, properties, or activities not included in Categories A or B.	72 dBA (Exterior)
D	Undeveloped lands	none

Source*: Code of Federal Regulations, Title 23, Part 772*

[1]dBA refers to the sound levels measured in decibels on the A-scale of a sound meter. A-weighting of decibels is related to how the human ear responds to different frequencies.

Noise measurements were taken at potentially impacted areas within the project area (refer to Figure 14). The NAC land use categories that were identified within the project area were B (residences), and C (commercial businesses). ADOT noise abatement guidelines state that abatement strategies should be considered when the L(eq) noise levels "approach" or exceed 67 dBA for a category B land use, or 72 for a category C land use. The "approach" threshold, as defined by ADOT, is 3 dBA. Therefore, a noise impact occurs at levels of 64 dBA for a category B land use and 69 dBA for a category C land use. These guidelines also state that noise abatement should be considered when the noise levels "substantially exceed the existing noise levels". This criterion as defined by ADOT is an increase in the L(eq) of 15 dBA or more above existing noise levels. ADOT policy does not provide for mitigation of commercial sites.

The No Action Alternative (refer to Section II) demonstrates that six receptor sites are currently impacted with at least a 64 dBA or greater. (refer to Table 12). These sites include two groups of apartments and one group of single family residences. The apartments are located on the corner of 43rd Avenue and Medlock Avenue, and on the corner of Camelback Road and 41st Drive (refer to Figure 14). The single family residences are located between Grand Avenue and Camelback Road. Under the No Action Alternative, the 2025 design year, essentially the same receptor locations would be impacted as the existing conditions (refer to Table 12).

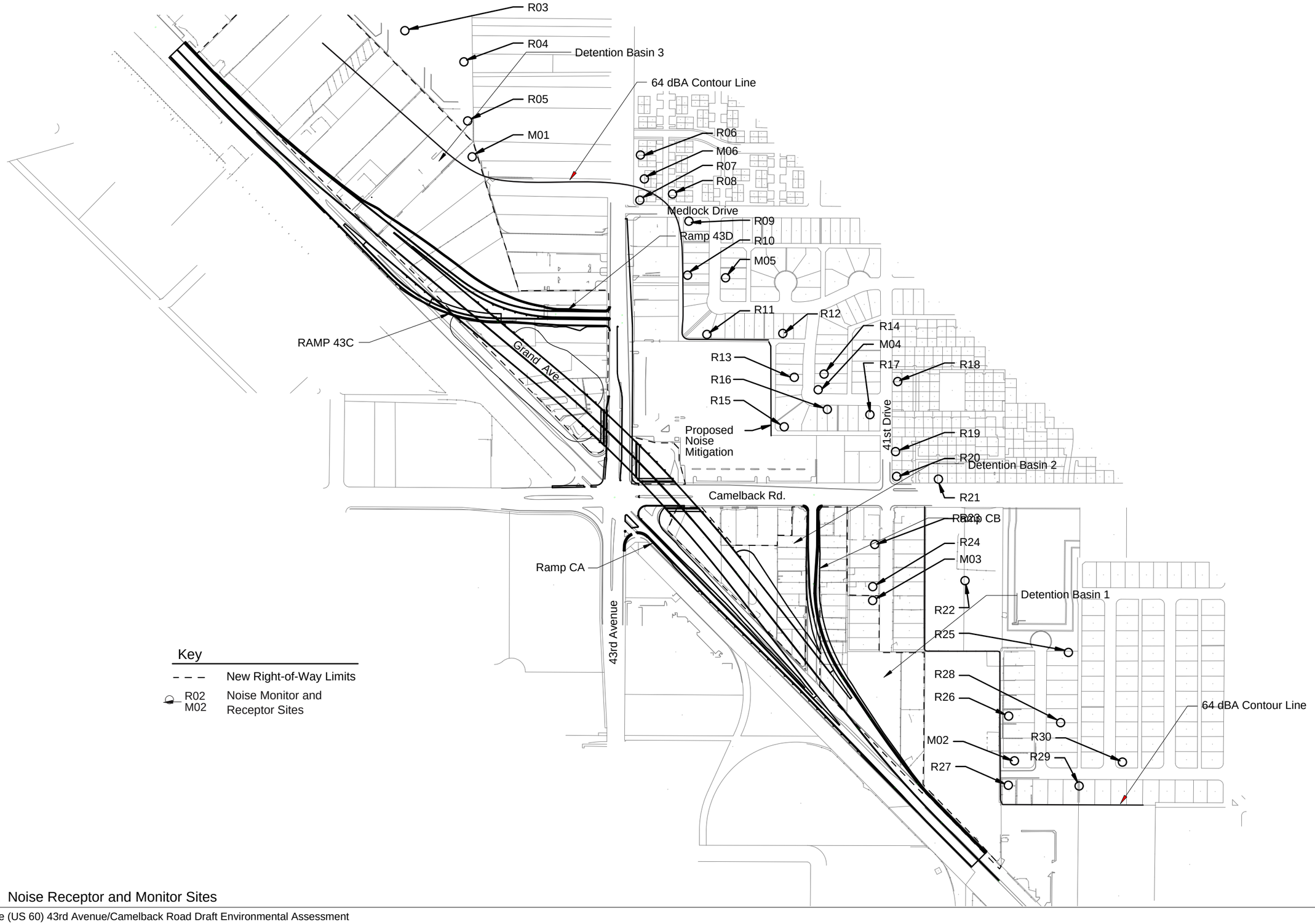


Figure 14. Noise Receptor and Monitor Sites

Table 12. Projected Noise Levels (dBA)				
Receptor Site Location	**Existing Conditions (2000) (dBA)**	**No Action (2025) (dBA)**	**Preferred Alternative (2025) (dBA)**	**dBA Increase Over No Action Alternative**
M1	58	58	63	5
M2	58	58	62	4
M3	65	65	71	6
M4	58	58	62	4
M5	57	58	61	3
M6	63	64	63	-1
R3	56	56	61	5
R4	55	56	60	4
R5	57	57	62	5
R6	57	58	60	2
R7	66	67	68	1
R8	58	59	61	2
R9	59	59	62	3
R10	60	60	63	3
R11	58	59	62	3
R12	55	56	60	4
R13	56	57	60	3
R14	57	57	61	4
R15	60	61	65	4
R16	59	60	63	3
R17	59	59	62	3
R18	57	58	61	3
R19	61	61	63	2
R20	71	71	73	2
R21	65	66	68	2
R22	54	55	59	4
R23	67	68	71	3
R24	64	65	70	5
R25	55	56	60	4
R26	59	59	63	4
R27	59	59	63	4
R28	56	57	61	4
R29	56	56	61	5
R30	56	56	61	5

Source: Arizona Department of Transportation. 2000. Noise Study Report

The proposed improvements on Grand Avenue at the Camelback Road and 43rd Avenue intersection, according to the noise study, would impact two duplex units on the east side of the Home Depot illustrated as Receptor Site 15 (refer to Figure 14 and Table 12). The modeling indicates that these residences would experience a 4 dBA increase when comparing the Preferred Alternative to the No Action Alternative, and would approach or exceed the NAC threshold limits for Category B land uses. The only potential solution

would be to install a 10-14 foot noise wall replacing the private screen wall, which currently exist on the northwest side of the Home Depot. This noise wall would reduce decibel levels by approximately 6 dBA, but only two receiver sites would directly benefit. Under existing state law ADOT is not able to construct noise walls on private land. Therefore, no reasonable or feasible noise mitigation could be provided for these receivers.

R23 and R24 located just east of the northwest bound off-ramp would experience a 3 to 5 dBA increase when comparing the Preferred Alternative to the No Action Alternative. However, these receptor sites are currently impacted under the existing conditions scenario, and would be impacted under the No Action Alternative; without construction improvements. This is primarily attributable to those noise sources generated by traffic on Camelback Road (refer to Table 12).

ADOT analyzed three mitigation scenarios (Scenarios 1,2, and 3) for residences located near the northwest bound off-ramp (near R23 and R24). Under all three scenarios, two different wall heights were used in the modeling, which included a 10-foot wall and a 12-foot wall. Noise reductions ranged between zero and eight dBA depending on wall height and the total length of wall. The 12-foot wall option consistently reduced noise levels greater than the 10-foot wall option. The same general alignment was used consistently throughout the modeling.

The general noise wall alignment paralleled the homes located east of the northwest bound off-ramp from the south end of the row of homes along 41st Drive to Camelback Road. Scenario 3 differed from scenario 1 by extending the wall construction along Camelback Road eastward within the City of Phoenix right-of-way until 41st Drive. Scenario 2 was analyzed using the same alignment as both scenarios 1 and 3, but would terminate approximately half way between R23 and R24 along the proposed ADOT right-of-way take boundary. Under all three scenarios costs would be nearly double the current ADOT Noise Abatement Policy guidance of $35,000 per benefitted receiver. The cost per benefitted receiver would range between $62,000 and approximately $91,500. Therefore, no reasonable and feasible abatement could be provided.

In summary, R7, R20, R21, R23, R24, and M3 are currently impacted with at least 64dBA. These receptor and/or monitor sites approach or exceed the NAC threshold limits of 64 dBA, as shown in Table 12. These sites are currently being impacted by other noise sources, which can primarily be attributed to their close proximity to Camelback Road, 43rd Avenue, and Grand Avenue both now and under the No Action scenario. In addition, these monitor and receptor sites are also above the NAC threshold under the Preferred Alternative scenario. Abatement measures were evaluated, but due to the current state law prohibiting ADOT from constructing walls on private land , and the fact that the cost would be nearly double when calculating per benefitted receiver costs for those residences that would remain near the proposed northwest-bound off-ramp alignment, no mitigation would be recommended. The proposed project would not substantially impact the overall noise quality of the project area.

H. Landscape/Vegetation Removal/Invasive Species

The existing right-of-way has been previously cleared of vegetation for construction of the respective roads, residential uses, commercial, and industrial development. Additional right-of-way would be required, and the area required to construct the proposed improvements would be cleared and grubbed. Erosion control would be in accordance with ADOT's Standard Specifications and Section 402(p) of the Clean Water Act.

Under Executive Order 13112 dated February 3, 1999, projects which occur on Federal Lands or are Federally funded must: "subject to the availability of appropriations, and within Administration budgetary limits, use relevant programs and authorities to: (i) prevent the introduction of invasive species; (ii) detect and respond rapidly to and control populations of such species in a cost-effective and environmentally sound manner; (iii) monitor invasive species populations accurately and reliably; (iv) provide for restoration of native species and habitat conditions in ecosystems that have been invaded.

In accordance with Executive Order 13112, the project area was surveyed by a qualified noxious weed authority, and it was determined that there are no listed invasive species within the project boundaries. Therefore, this project would not result in the spread of invasive species. In order to prevent the introduction of invasive species, all earth-moving and hauling equipment would be washed prior to entering the construction site.

All embankment slopes and detention basins would be landscaped with low-water use plants and covered with decomposed or crushed granite. An irrigation system would be needed to establish and maintain the plants. Trees would be planted along the detention basins to screen the facilities from view of the motorists and businesses. Therefore, there would be no substantial impacts relating to vegetation or invasive species.

I. Vegetation and Wildlife

Grand Avenue at 43rd Avenue and Camelback Road is an urbanized area depleted of natural surroundings. The project area lies primarily within the Lower Colorado River Valley Subdivision, with some transition nearby into the Arizona Upland Subdivision of the Sonoran Desert Scrub Biotic Community (Brown 1994.) Because of existing development, the project area provides minimal habitat for native wildlife. Urban environments in the metropolitan area support a variety of wildlife species adapted to developed conditions, but mostly utilize vegetation in residential and commercial landscaping, parks, and agricultural fields. There would be no apparent impacts to vegetation and wildlife because the land use within the project area is predominately industrial and commercial uses with minimal site vegetation.

J. Threatened, Endangered, and Sensitive Species

The U.S. Fish & Wildlife Service's (USFWS) list of endangered, threatened, proposed, and candidate species for Maricopa County was reviewed by a qualified biologist (Barbara Garrison, Logan Simpson Design). It was determined that no listed species or designated critical habitat would be affected by the construction of the alternatives because the project area is completely urbanized and does not support any suitable habitat; therefore, no biological survey within the project limits would be necessary.

There are no existing protected native plants within the project limits that would be impacted; therefore, there would be no impact to any protected native plants as a result of this project.

K. Visual Resources

In general, the visual or scenic quality within the project area can be characterized as an area dominated by older commercial and industrial land uses typical of the Grand Avenue corridor. These buildings are constructed and painted a variety of materials and colors, respectively. There is a limited amount of landscaping at commercial and industrial businesses. Because the terrain within the project area is relatively flat, distant views of mountains can be seen from the project area. Some of the most distinct views include the Estrella Mountains to the south and the White Tank mountains to the west. Prominent built features within the project area include the residential, commercial and industrial development, the BNSF railroad tracks, traffic lights, billboards, and overhead power lines.

Except for the grade-separation structure, the proposed improvements would create a subtle change to the visual character and quality of the project area. The overpass structure and associated ramps would be highly visible to motorists and to the adjacent residential and commercial properties. This structure would detract from the visual character and quality because it would be elevated approximately 25 feet above ground at its highest point unobstructed visually from the residential area, and dominate the setting in terms of scale and form. To soften the contrasting structural improvements, landscaping would be completed on all roadway embankments and disturbed public right-of-way within the project area. The detention basins would be landscaped with trees to screen views and the existing alignment of Grand Avenue would be re-graded and landscaped.

The City of Phoenix is currently evaluating additional aesthetic treatments to improve the visual quality of the overpass. Funding for these treatments would be handled by the City of Phoenix. ADOT would coordinate and review the City of Phoenix's proposed treatments during final project design. These art treatments would improve the visual quality of the structure.

Although an elevated grade-separation structure would be constructed, the project would not substantially alter the overall visual quality and character of the project area because of the existing urban setting, associated landscaping of facilities, and artistic treatments as provided by the City of Phoenix.

L. Drainage and Floodplain Considerations

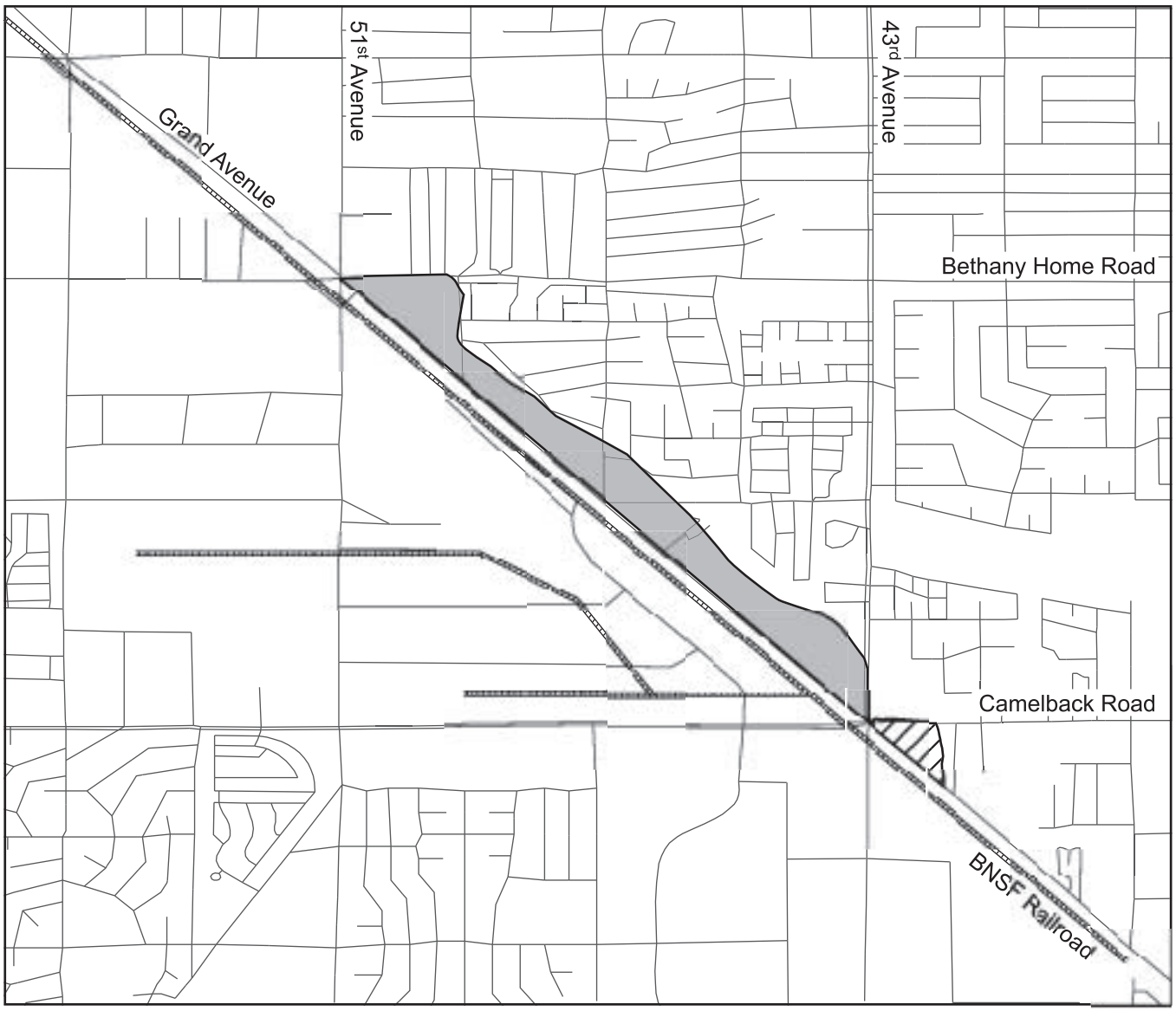
Flood Insurance Rate Maps (FIRM) have been prepared and published by the Federal Emergency Management Agency (FEMA) for the project area. A portion of the project is located within a 100-year floodplain (refer to Figure 15). Flood prone areas have also been determined by the Maryvale Area Drainage Master Plan (ADMP) (Flood Control District of Maricopa County, 1997). Impacts on floodplains typically occur when the topography within a floodplain is substantially modified either by placement or removal of materials within the floodplain.

The proposed improvements would include the construction of a grade-separation structure and embankments for ramp approaches. Detention basins, channels, and culverts would also be constructed as part of this project. In addition, roadway curbs would be designed to allow rainfall to drain off of the roadway surface. New culverts would be designed to meet the ADOT criteria for a 50-year flood event and FEMA regulations. Existing culverts meeting ADOT criteria and FEMA regulations would be extended as necessary. The objective would be to limit the potential for effects to adjacent properties and existing drainage patterns during times of substantial rainfall and associated run-off.

The Maryvale ADMP identified flooding along the BNSF railway. The ADMP recommended that a detention basin on the southwest corner of Camelback Road and 43rd Avenue be constructed. The detention basin would have capacity to hold 38 acre-feet and would accommodate up to a 10-year storm, but the project to date has not been funded.

The proposed project would include construction within the existing designated 100-year floodplain as defined by FEMA. According to the ESRI/FEMA Project Impact web site (http://www.esri.com/hazards), the floodplain limits currently extend between the intersection of 43rd Avenue and Grand Avenue in a northwesterly direction towards 51st Avenue and Grand Avenue (refer to Figure 15). According to ADOT technical specialists this floodplain extends beyond its southeasterly limit at 43rd Avenue to include that area represented as flood prone area (refer to Figure 15), although established records of this were not found during preparation of this EA.

Because of the proposed project's embankment location, the parcels located along Camelback Road east of its intersection with 43rd Avenue could potentially be impacted during high volume rainfall events. Even though the proposed project's storm water detention system would collect and contain water up to a 50-



Key

100-Year Floodplain

Potential Area of Impact

Figure 15. Potential Flood Prone Area

NORTH

year event, larger rainfall volumes could potentially impact these parcels. ADOT would further evaluate the parcels located just east of 43rd Avenue and south of Camelback Road during final design to minimize potential flooding impacts. This evaluation would also include the option to deepen all of the detention basins within the project area and/or to enlarge specifically Detention Basin Number 2. By increasing storage capacity at these detention basins, this alone would minimize impacts to remaining parcels located east of 43rd Avenue and south of Camelback Road. Because the parcels are currently in an area that is known to be prone to flooding during high volume rainfall events, and the fact that ADOT would continue to evaluate options to minimize any project related impacts, the proposed project would not substantially impact the project area's drainage characteristics.

M. Water Resources, Section 404 of the Clean Water Act, and National Pollutant Discharge Elimination System

The proposed construction activities would not involve the discharge of dredged or fill material into waters of the United States; therefore, no Section 404 permit or Section 401 Water Quality Certification is required.

Because 5 or more acres of land would be disturbed, a National Pollutant Discharge Elimination System permit would be required. The ADOT Roadside Development Section would determine who would prepare the Storm Water Pollution Prevention Plan. The District Construction Office would submit the Notice of Intent and the Notice of Termination to the U.S. Environmental Protection Agency and copies to Arizona Department of Environmental Quality. A Notice of Intent would be submitted to the U.S. Environmental Protection Agency at least 48 hours prior to the start of construction.

During construction, care would be taken to ensure that construction materials are handled in accordance with *Arizona Department of Transportation Standard Specifications for Road and Bridge Construction* Section 104.09 (2000) and the Water Quality Standards in Title 18, Chapter 11 of the Arizona Administrative Code as administered by the ADEQ. Excess concrete, curing agents, form work, loose embankment materials, and fuel would not be disposed of within the project boundaries.

The proposed construction activities would not involve the discharge of dredged or fill material into waters of the United States; therefore, no Section 404 permit or Section 401 Water Quality Certification is required. Therefore, the proposed project would not impact any jurisdictional waters of the United States or violate any state water quality certification requirements.

N. Materials Sources

The estimated quantity of fill materials required for this project is approximately 286,000 cubic yards. Of the this total, 275,000 cubic yards would be used for the embankments and 11,000 cubic yards would be required for the construction of walls located on the overpass structure. The construction of detention basins would provide most of the required borrow material for the construction of embankments slopes. Any material sources required for this project outside of the project area would be examined for environmental effects, by the contractor, prior to use, through a separate environmental analysis. The contractor would comply with the *Arizona Department of Transportation Standard Specifications for Road and Bridge Construction,* Section 1001 Material Sources (2000 Edition). Therefore, the proposed project would not have any known impacts associated with the use of fill material from these sources.

O. Construction Debris Disposal

Excess waste material and construction debris would be disposed of at sites supplied by the contractor. Disposal would be made at either Municipal Landfills approved under Title D of the Resource Conservation and Recovery Act (RCRA), Construction Debris Landfills approved under Article 3 of the Arizona Revised Statutes (ARS) 49-241 (Aqua Protection Permit) administered by ADEQ, or Inert Landfills. Inert Landfills are not regulated by ADEQ. Therefore, the proposed project would not have any known impacts associated with the approved disposal methods as provided for at landfills approved under Title D of RCRA.

P. Hazardous Materials

A Preliminary Initial Site Assessment (PISA) was conducted for the presence of hazardous materials within the project area. The assessment included a field reconnaissance, review of applicable Federal and State Agency records, and a review of aerial photographs. The PISA indicated that 8 sites would require a full Phase I Site Assessment. ADOT would complete a full Phase I Site Assessment prior to right-of-way acquisition of any sites identified in the Preliminary Initial Site Assessment that would require further evaluation.

The purpose of the Phase I Site Assessment is to establish good customary practice for conducting the site assessment of a parcel, and to recognize or identify current environmental conditions of a parcel. Phase I Site Assessments have become the industry standard to meet the “due diligence” requirements of the Comprehensive Environmental Response, Compensation Liability Act (CERCLA). Requirements for Phase I reports are defined in American Society for Testing and Material’s report *E1527-00 Standard Practice fo Environmental Site Assessments: Phase I Environmental Site Assessment Process*.

According to *Arizona Department of Transportation's Standard Specification for Road and Bridge Construction*, Section 107 Legal Relations and Responsibility to Public (2000 Edition) (Stored Specification 107HAZMT, 01/15/93), if previously unidentified or suspect hazardous materials are encountered during construction, work would stop at that location and the ADOT Engineer would be contacted to arrange for proper treatment of those materials. Such locations would be investigated and proper action implemented prior to the continuation of work in that location.

Because the proposed project would involve the identification and clean-up of any hazardous materials or sites within the proposed construction limits, the project would be a beneficial impact with respect to potential hazardous materials.

V. Secondary and Cumulative Impacts

The NEPA directs Federal agencies to examine the consequences of proposed activities in light of an overall goal to protect and enhance the human environment. These consequences are grouped into the general categories of secondary and cumulative effects.

A. Regulatory Basis

Under the Executive Office of the President of the United States, the Council on Environmental Quality (CEQ) promulgates regulations, binding on all Federal agencies, to implement the procedural provisions of NEPA. The regulations address the administration of the NEPA process, which include the evaluation and resulting magnitude of direct, indirect, and cumulative impacts, as defined in 40 CFR 1508.25. The FHWA implements NEPA and the CEQ guidelines with its environmental regulations at 23 CFR 771. The regulations describe documentation requirements and procedures for environmental clearances. Concerning Secondary and Cumulative Impacts, these are measured in terms of their context and intensity.

Context as defined by the CEQ means that the magnitude of an action must be analyzed in several circumstances such as society as a whole (human or national), the affected region, the affected interests, and the locality. Both short- and long-term effects are relevant. Intensity refers to the severity of the impact. These impacts may be both beneficial and adverse, but can be determined to be substantial even if the Federal agency believes the balance of the effect will be beneficial.

B. FHWA Policy Statement and Guidelines

In April 1992, the FHWA Project Development Branch issued a policy paper titled *Position Paper: Secondary and Cumulative Impact Assessment In The Highway Project Development Process*. The FHWA and ADOT recognize the growing need to include analysis of indirect impacts in project environmental studies. The commitment to conduct comprehensive environmental and public interest decision-making requires the collection and presentation of all information relevant to a project, including its indirect consequences and contribution to area-wide change. This FHWA policy paper presents preliminary information and guidance, but does not prescribe specific techniques.

The following Secondary and Cumulative Effects sections only respond to those impacts that were originally considered to be either potentially adverse or beneficial. Elements without Secondary or Cumulative Impacts were not discussed.

C. Secondary Impacts

Secondary effects are broadly defined by the CEQ as "those impacts that are caused by an action and occur later in time, or are farther removed in distance but are still reasonably foreseeable after the action has been completed" (40 CFR 1508.8). They comprise a wide variety of secondary effects such as changes in land use, economic vitality, and population density. Secondary impact issues relevant to this project include access, noise and visual quality. Secondary land use impacts were not considered because most of the project area has been developed for the last decade or longer, and most nearby vacant parcels would be purchased for the proposed improvements.

1. Access

Access control plans and features would be implemented for the proposed Grand Avenue grade-separation structure at 43rd Avenue and Camelback Road. These plans would require some streets to be closed near their existing points of connection with Grand Avenue. There would be the potential for new cut-through traffic patterns as a result of the street closures. Measures could be taken to limit these impacts such as signing, law enforcement, and/or implementing speed control bumps (specifically for the residential area). Because this is not easily forecasted or measured, the magnitude of impacts are not truly known at this time, but are not anticipated to be substantial.

2. Noise

A noise analysis was completed and documented in a report entitled *Noise Technical Report* (ADOT 2000), and is also described in this document. The results of this study indicate that noise levels would increase in time regardless of any future proposed improvements. Because the project involves the construction of a grade-separation structure, meaning the roadway would be elevated, the noise disturbance would be in direct line-of-sight to nearby residences. As traffic increases over time on Grand Avenue additional noise would be generated, but these impacts would not be anticipated to be substantial.

3. Visual Impacts and Economic Vitality

The results of modernizing traffic facilities and improving the area-wide aesthetics with landscaping of ramps, embankments, and detention basins would notably improve the visual character and quality of the area, and to some degree, potentially the economic vitality. These changes could improve future marketability and encourage redevelopment of nearby industrial businesses or improvements to be completed at existing residences. Certain parcels situated near the overpass or at locations where access to the overpass is optimal may become more marketable and even encourage the remaining property owners or business owners to consider visual improvements to their building or property, such as additional

landscaping or property clean-up.

Parcels could also increase in value because of reduced traffic congestion and delay times, changes to access which would improve ingress and egress conditions for exporting or importing goods, or accessing neighborhoods. Because the true results of these improvements would not be known until sometime after completion, the overall future economic vitality of the project area is unknown, although impacts are not anticipated to be substantial. Therefore, the proposed project would not substantially impact the visual character or economic vitality of the project area in the future.

D. Cumulative Impacts

Cumulative effects are the combined impacts on the environment that result from the incremental effect of the proposed action when added to past, present, or reasonably foreseeable future actions within the immediate vicinity of the project area (40 CFR 1508.7). These impacts are less defined than secondary effects. The cumulative effects of an action may be undetectable when viewed in individual context of direct or even indirect, but could add to a measurable environmental change. For this assessment, past actions are those considered to have occurred since 1990, and foreseeable future actions are based on the best available information from the associated planning agencies. The majority of the development within the project area has occurred prior to 1990.

1. Population Growth and Transportation Facility Development

The West Valley is experiencing ongoing residential, commercial, and industrial development. The result of this growth is more population, employment, and revenue for the state and local jurisdictions, and more demand upon the area's transportation facilities. The population in Arizona has grown steadily over the past 30 years, increasing from 1,775,399 persons in 1970 to 4,961,953 in 2000. Maricopa County's population has grown from 971,228 in 1970 to 2,122,101 as per the 1990 Census. According to the Arizona Department of Economic Security, the 2020 population in Maricopa County is estimated to grow to nearly 4,516,090 people. Transportation improvements contribute to future development site selection. Because Grand Avenue is not the sole arterial street connecting the West Valley, it is unlikely that any proposed improvements to Grand Avenue would greatly increase or contribute to development site selection. Other key links to the West Valley such as I-10, Loop 101, and the Loop 303, and any improvements made to these facilities in the future would more likely be contributors that could promote development in the West Valley.

The most influential future actions associated with this project are the proposed realignments of other intersections along Grand Avenue, and any future considerations for expansion or implementation of

expressway facilities. ADOT is considering making improvements at a total of eight sites between I-17 and the Agua Fria Freeway, which include the following:

- 27th Avenue and Thomas Road
- 43rd Avenue and Camelback Road
- 51st Avenue and Bethany Home Road
- 55th Avenue and Maryland Road
- 59th Avenue and Glendale Avenue
- 67th Avenue and Northern Avenue
- 75th Avenue and Olive Road
- On-ramps to the Agua Fria (Loop 101L) from 91st Avenue and Grand Avenue

These proposed project sites are currently being evaluated and designed through a Design Concept Report or similar design documents, and separate Environmental Assessments. Depending on scheduling of other proposed improvement projects along the Grand Avenue corridor, construction-related traffic impacts could limit or potentially impact the overall function and use of Grand Avenue during these construction projects. Traffic control plans would mandate that all local access to businesses and residential areas would be maintained during construction. In addition, projects would be scheduled to limit overlapping and also to limit the overall impacts to the operation and function of the Grand Avenue corridor. Motorists could use other arterial streets such as Indian School Road or Osborn Road, or any construction-related detours to access businesses or residences. This would require that motorists navigate around construction zones and would create longer travel times and inconvenience motorists. It is not anticipated that these construction impacts would be substantial because they would be temporary.

It is anticipated that traffic operations on Grand Avenue would be considerably improved after the completion of the eight improvement projects. Current and projected average ADT numbers and LOS classifications illustrate that these eight intersections operate at the poorest of traffic operation levels with substantial delay times usually greater than 1.3 minutes. The recommended intersection improvements would not only improve the LOS at each of the proposed project sites, but would also improve community mobility and access throughout the corridor.

Therefore, It is not anticipated that the proposed project would result in any substantial impacts as a result of any known traffic improvement projects or substantially impact, either adverse or beneficial, population growth in the West Valley.

2. Natural Environment

The most notable cumulative impacts with respect to the natural environment of the associated Grand Avenue projects are the results of channelizing drainage and detention of storm water. Storm water will be routed to detention basins or existing storm drain facilities. These facilities would be beneficial because they would aid in the area's drainage and potentially alleviate some large-scale flooding near the proposed project sites. At a minimum, these drainage improvements would not increase area flooding. The proposed drainage facilities may also provide a link to future area-wide drainage planning being currently evaluated by the Flood Control District of Maricopa County and local jurisdictions.

Recently completed, ongoing, and future urban and suburban development, including highway construction, contribute toward the cumulative loss of undeveloped lands and changes to the natural environment. Because the proposed Grand Avenue roadway improvements would affect lands that have been previously disturbed, the proposed activities would not increase cumulative effects on biological resources in the region.

The project area is located within a non-attainment area for CO, PM_{10}, and O_3 air quality standards. The traffic forecasts used for the air quality analysis were based on the construction equipment and traffic generated by existing and anticipated future land uses within the project area. In addition, future year background pollutant conditions, based on regional air quality trends, were added to emissions generated by the project. The results of the analysis indicate that regional and localized air quality would not be adversely affected at any of the proposed project areas currently being evaluated. Therefore, it is not anticipated that human health hazards and lower ambient air quality would result from the current or future construction projects proposed along Grand Avenue.

In summary, the proposed improvements would not substantially effect either adverse or beneficial, the natural environment of the project area with respect to floodplain, drainage, biological resources, or air quality.

3. Human Environment

Because of the potential for new development as a result of improved traffic circulation and access through the corridor, the social and economic impacts should be positive. Relative to Maricopa County, notable populations of minority groups and low-income persons occur within neighboring residential areas adjacent to the Grand Avenue corridor. These distinct populations, as defined by Executive Order 12898, would not be disproportionately impacted by any of the proposed projects. In general, access to public facilities would be maintained. As a result of the proposed improvements throughout the corridor, community cohesion would be impacted. It is not anticipated that these impacts would be substantial because the improvements that would be made would eliminate the six-legged intersection and improve the operation and function of

the remaining intersection. This would reduce travel times through the intersection and may improve the communities ability to travel between the northeast and southwest sides of Grand Avenue.

The possibility of new business development as a result of the improvements made to the corridor may increase job opportunities for these populations. As a result of these eight project sites and the improved operation and functionality of Grand Avenue, new job opportunities for low-income and minority populations could occur in the future. In addition, it is not anticipated that these projects would substantially alter neighborhoods or community character that are valued by low-income and minority populations through incremental development.

As a result of anticipated operational improvement and functionality of the Grand Avenue corridor, new development along the corridor may be encouraged. The shifting of roadway alignments would provide new opportunities at sites currently undeveloped, such as the agricultural land designated for future industrial use along the 91st Avenue on-ramp project. In addition, these proposed alignment changes could promote improvements or expansion of existing commercial and retail developments, because better traffic operations could encourage additional patronage to the corridor. Therefore, the cumulative impacts of these eight projects may improve or promote the development of nearby vacant lands, and encourage improvements to existing land uses within the Grand Avenue corridor while potentially improving the overall community character.

The RPTA bus line along Grand Avenue, the Yellow Line, may be altered with the completion of these grade-separation structures. The grade-separation structures may disconnect portions of Grand Avenue from other RPTA bus lines, although further evaluation would be completed in final design. As a result, the RPTA Yellow Line may no longer function as it does today. The positive result of this potential change is that expressway-like bus service would be possible. Even though the results of the impact to local transit service may be substantial, it is anticipated that these changes may be beneficial overall.

The visual quality of the existing Grand Avenue corridor is characterized by older commercial and industrial buildings, which are common throughout this segment of the corridor. Some of these existing developments would be acquired during right-of-way proceedings for the proposed realignment of the various intersections. The overall character and visual quality may be improved by the acquisition of parcels of lands where portions of these older commercial and/or industrial buildings occur and the landscaping of embankment and detention basins. New developments could potentially be constructed adjacent to these new roadway alignments or additions could be made to existing commercial or industrial facilities. Therefore, the cumulative impacts on the visual quality and character of the Grand Avenue corridor are anticipated to create a positive change.

In summary, the proposed project would not substantially effect distinct minority or other protected populations, land uses, regional public transit services, or the visual character of the corridor.

4. Cultural Environment

Development impacts on the cultural environment at each of the eight project sites along Grand Avenue also contribute to cumulative impacts. Because of the presence of historic and prehistoric properties and historic districts within the Grand Avenue corridor, careful consideration and evaluation has been completed for these features. Several properties were considered potentially eligible or eligible for listing on the NRHP. As a result of the PA between FHWA, ADOT and the SHPO, any loss of prehistoric or historic features would only represent a fraction of the local, regional, or state resource base. Therefore, the proposed project or future known actions would not substantially impact the historic integrity or cause the fragmentation of historic districts.

VI. PUBLIC INVOLVEMENT AND PROJECT COORDINATION

A. Agency and Stakeholder Coordination

Coordination letters were sent to the following agencies and stakeholders for the EA. These letters provided a brief project description and location, and requested comments or issues regarding the natural, physical and socio-economic environments of the proposed project area.

Arizona Department of Public Safety
Alhambra School District
Burlington Northern Santa Fe Railway
City of Glendale
City of Phoenix
Cox Communication
Flood Control District of Maricopa County
Maricopa Association of Governments
Maricopa County
Phoenix Union School District
RPTA
Salt River Project
Southwest Gas Company
U.S. West Communication (QWEST)

An agency coordination meeting and field review were held on October 28, 1999. Issues included the following:

- Impacts to transit routes.
- The signing of US 60 from I-10 to Grand Avenue.
- Noise impacts to adjacent neighborhoods.
- Vertical clearance requirements over the BNSF railroad.
- Whether or not street lighting would be provided.

These issues were evaluated and addressed by ADOT during the preparation of the Design Concept Report. In addition, these issues have been included as part of the project record file.

B. Public Involvement

Two public information meetings have been held on the proposed improvements in the City of Phoenix, Maricopa County, Arizona. The public meetings were held for two proposed Grand Avenue projects simultaneously (27th Avenue and Grand Avenue, 43rd Avenue and Grand Avenue) at the Granada East Elementary School Multi-Purpose Room located at 3022 West Campbell Avenue, Phoenix, Arizona on November 3,1999, and again on February 9, 2000. The public meetings were held as a modified open house with a brief formal presentation at the beginning of the meeting by ADOT and the consultant staff. The purpose of the meetings were to solicit comments, concerns, and issues related to the alternatives. A total of 98 people attended the November meeting and 102 people attended the February meeting. Notices of the public meetings were placed in the Arizona Republic on the following dates: October 20, 1999, October 31, 1999, January 27, 2000, and February 6, 2000 for their respective meeting dates. In addition, 15,000 door hangers were distributed within the immediate vicinity of the project area prior to each public meeting. Public service announcements were also sent to the media prior to the meetings.

Comments received during the November 3rd public meeting included the following:

- As a result of these proposed improvements would property values would decline? (2 comments) (Refer to Chapter IV.)
- What type of future businesses would develop near the overpass, or the likeliness of the area underneath the overpass attracting homeless individuals? (4 comments) (Refer to Chapter IV.)
- Additional traffic going through the neighborhoods. (2 comments) (Refer to Chapter III.)
- Take the ramp down 41st Avenue not 42nd Avenue. (2 comments) (Refer to Chapter III.)
- Why doesn't ADOT entertain questions and answers at the public meeting? (2 comments) (Refer to Chapter VI.)
- Consider Monorail- mass transit system. (2 comments) (Refer to Chapter III.)
- Concerned about access to local business. (2 comments) (Refer to Chapter III.)
- The ramps and overpass seem to be located in the best possible locations that would best serve the local residents and local businesses. (Refer to Chapter III.)
- Project does not solve the train problem. (Refer to Chapter III.)
- Concerned that the traffic coming south will further complicate the intersection of 39th Avenue and Grand Avenue. (Refer to Chapter III.)
- Concerned about the property between the northwest off-ramp and the overpass. (Refer to Chapter III and IV.)

Comments received during the February 9, 2000 meeting included the following:

- What about a median closure at Missouri? (Refer to Chapter III.)
- Can bus stops be relocated on the south side of Ramp D. (2 comments) (Refer to Chapter III.)
- Can left turn lanes be opened from Camelback going east onto 43rd Avenue. (Refer to Chapter III.)
- Why not build Camelback over Grand Avenue and the BNSF railroad? (2 comments) (Refer to Chapter III.)
- Please use more reds in cement coloring and gravel, and get away from gray and/or sand tone. (Refer to Chapter IV.)
- Thank you for the amazingly thorough planning. (Refer to Chapter I.)

These comments were evaluated during preparation of the Initial Design Concept Report and are included as part of the project record file. These comments were reviewed by ADOT, and responded to, in writing, when requested. A public hearing is scheduled to be held to provide the public the opportunity to comment on the Environmental Assessment. A copy of the public hearing notice is included in Appendix C.

C. Project Coordination

Preparation of this EA was the responsibility of Diane Simpson-Colebank and Michael Shirley of Logan Simpson Design Inc. (LSD). Technical investigations and information were provided for cultural resources by Linda Grafil, Dave Webb and Chester Shaw with LSD, and Bettina Rosenberg of ADOT EPG Heritage Preservation Team; Title VI Environmental Justice by Shero Holland with LSD, and Tammy Flaitz with ADOT EPG, hazardous materials by ADOT EPG; air quality, noise and drainage by URS Greiner Woodward Clyde, and project description and roadway design by Dave French of URS Greiner Woodward Clyde. Project representatives from ADOT included Karim Dada (EPG), Dustin Watson (EPG), Fred Garcia (EPG), Jim Romero (Valley Project Management). Project representatives from FHWA included Ken Davis, Bill Vachon, Steve Thomas, Tom Deitering, Ron Hill, and Rebeca Rivera.

BIBLIOGRAPHY

The following references are available upon request through the ADOT EPG office located at South 17th Avenue, Phoenix, Arizona or by phone at (602) 712-7767.

American Association of State Highway Transportation Officials. 1999. *AASHTO Transportation Policy Book*.

American Society for Testing and Materials (ASTM). 2000. Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process. Document no. E1527-00. West Conshohocken, PA.

Arizona Department of Transportation. *Initial Design Concept Report, Grand Avenue (US 60) 43rd Avenue/ Camelback Road*. 2000.

Arizona Department of Transportation. *Grand Avenue Major Investment Study*. 1999.

Arizona Department of Transportation. *Alternative Selection Report, Grand Avenue (US 60) 43rd Avenue/ Camelback Road*. 2000.

Arizona Department of Transportation. *Air Quality Analysis Report, Grand Avenue (US 60) 43rd Avenue/ Camelback Road*. 2000.

Arizona Department of Transportation. *Noise Study Report, Grand Avenue (US 60) 43rd Avenue/ Camelback Road*. 2000.

Brown, David E. *Biotic Communities: Southwestern United States and Northwestern New Mexico*. Salt Lake City. University of Utah Press. 1994.

Maricopa County. Air Pollution Control Regulations, Regulation III - Control of Air Contaminants. Rule 310 Fugitive Dust Sources. 2000.

Maricopa Association of Governments. 1997. *1995 Special Census for Maricopa County, Summary Tables.*

United States Department of Commerce, Bureau of the Census. 1992. *1990 Census of Population and Housing Summary Tape File 3A.*